

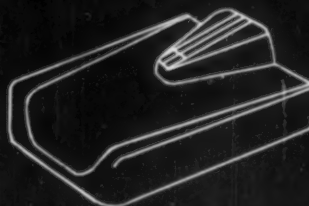
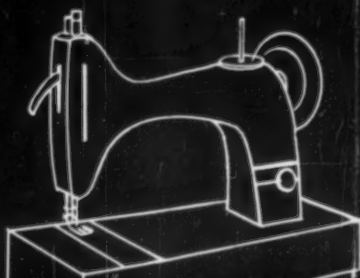
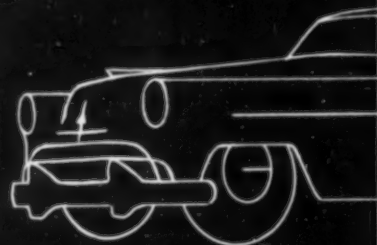
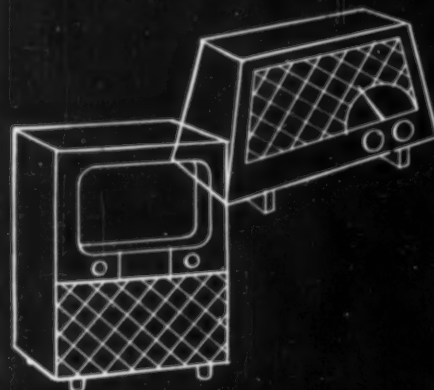
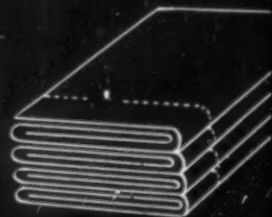
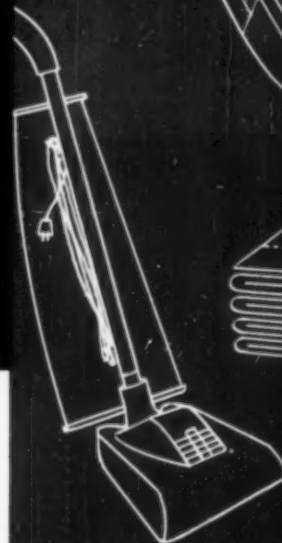
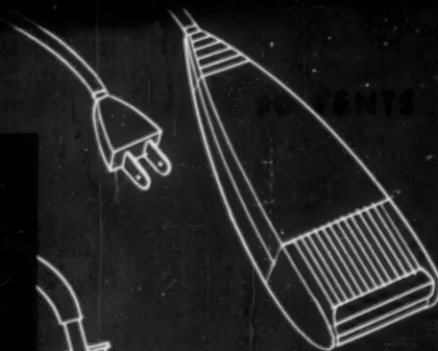
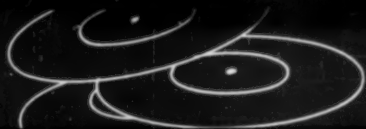
Consumers' Research

BULLETIN

DECEMBER • 1954

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Consumers' Research Bulletin

OFF THE EDITOR'S CHEST

THOSE who view with pessimism the future of individual enterprise and who lament the current trend toward bigger and fewer business establishments should consider the field of high fidelity. Some 15 years ago, when Consumers' Research, working with a number of competent engineers and technicians, published the design for an audio amplifier that with a good tuner and speaker would provide the listener with realistic reproduction of music, the response was enthusiastic but limited. Today, instead of remaining a hobby of a limited number of gifted souls, high fidelity has become a major enterprise, and interest has grown until production and distribution of "hi-fi" units and components is a booming business running to something like three hundred million dollars a year.

CR has made a contribution over the period of development to the consumer's side of this picture, for we began the testing of radio receivers in the mid '30's, and have reported the results of our technical tests on tuners, amplifiers, pickups, speakers, phonograph needles and records, since the early '40's. This work, with its wide recognition by qualified and intelligent ultimate consumers who have made a hobby of high fidelity, has provided an important stimulus to manufacturers to improve their amplifiers, AM and FM tuners, pickups, speakers, and other elements necessary for the well-designed high-fidelity system.

"High fidelity" is a term which is somewhat abused in current advertising now that it has become fashionable. It may be briefly described as a sound system for reproducing music and speech so accurately and so cleanly that the listener will feel that he is present in the same room with the speaker or musician, or, as Variety put it, "cutting through the specialized tweeter-woofer argot of the engineer. . . hi-fi is another way to describe canned music that's richer in detail and more realistic in impact than anything ever heard before outside of the actual concert hall."

Oddly enough, in spite of the know-how and technical resources of the big equipment manufacturers in the electrical and electronic field, the best equipment for high fidelity is produced by laboratories and workshops of small companies. The apparatus is essentially the product of a craft industry and is not readily adapted to mass-production techniques of the conventional factory assembly line. Just why this is so is

(Continued on page 31)



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Consumers' Research functions to provide unbiased information on goods bought by ultimate consumers. For their benefit (not for business or industry) and solely with the funds they provide, CR carries on tests and research on a wide variety of goods, materials, and appliances, and publishes the findings in CR Bulletin. Consumers' Research is a non-profit institution, and is organized and operates as a scientific, technical, and educational organization.

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The Consumers' Observation Post

THE LIGHTWEIGHT SCARVES so popular with teen-agers to cover up their bobby pins or to keep their hair from blowing in the wind will be subjected to new restrictions this next year. The Federal Trade Commission has ruled that scarves are articles of wearing apparel and are subject to flammability tests under the new law controlling highly flammable textiles. Some processing will be required to make the scarves conform to the new act.

* * *

THE COFFEE BREAK is held responsible, along with cigarettes and cocktails, for an increase in the ulcer rate among women by Dr. Leo J. Starry, Professor of Surgery at the University of Oklahoma Medical School. Dr. Starry pointed out that the short rest interval in which workers relax with a cup of coffee and often a cigarette has resulted in a higher rate of consumption of coffee and cigarettes among women workers, especially hazardous for those who have not had breakfast to provide a buffer against the secretion of ulcer-producing acids which is stimulated by cigarettes and coffee.

* * *

ADVERTISING OF SPECIAL CUT PRICES for automobile tires in certain cases has created a misleading initial impression of what is being offered. Although most national tire advertising has been found worthy of public acceptance by the National Better Business Bureau, N.B.B.B.'s president, Kenneth Willson, pointed out last fall that unqualified headings such as "Half-Price Sale" or "50% Off" to describe an offer where one article must be purchased at its full price before a second article can be bought at the featured half-price is a practice frowned upon by Better Business Bureau experts. Instead, it is suggested that such advertising feature with equal conspicuousness the fact that one article must first be purchased at its regular price; for example, "Buy first tire at regular price of \$00.00. Get second tire for half-price." Such a presentation avoids the misleading initial impression that each of the two tires is available at the featured reduction or saving.

* * *

CHRISTMAS TREES should be kept in water in a cool place and sprinkled with water frequently before they are put up for decoration. When the needles start falling from a tree, it is time to discard it, for it has dried out and may become a serious fire hazard, suggests Science News Letter.

* * *

PEOPLE WHO DO NOT ADD SALT to their food are less likely to have hypertension (abnormally high blood pressure) than salt eaters. Studies by Lewis K. Dahl and Robert A. Love of the Medical Department of Brookhaven National Laboratory found that there was a fivefold difference in habitual salt consumption between those who had hypertension and those who did not. They reported that there were no hypertensives whatever among the people who did not add salt to their food, out of a total of 448 consecutive members of the Brookhaven National Laboratory reporting for annual physical examinations.

* * *

THE USE OF ULTRAVIOLET LIGHT for disinfecting purposes has only a limited value. The Journal of the American Medical Association in answer to a physician's query last fall pointed out that placing shielded ultraviolet lights in the schoolroom to prevent common colds and other diseases that are air borne would not be particularly effective, since whatever protection might be afforded the occupants of the schoolroom would be lost when they left for home.

THE SO-CALLED SYNTHETIC CREAM FILLINGS for pastries and toppings for cakes must be refrigerated just as carefully as those made from real cream. This opinion was given by the California State Department of Public Health in response to inquiries from local health officers. A limited laboratory study made by the Department indicated that pastries with synthetic cream fillings and toppings were capable of supporting bacterial growth, including the dangerous staphylococci. Indeed, the products submitted for examination were already heavily contaminated when they were checked. The Department noted that the customary ingredients of synthetic cream products were sugar, egg white, starch, agar, meringue powder, dry skim milk, and artificial coloring, which in combination furnished a good medium for bacterial growth.

* * *

THE VOLUME OF SALES IN CHAIN STORES showed an unexpected drop in August when a rise was expected. Just what caused the decline was the subject of some soul searching among various retail executives, according to The Wall Street Journal. The president of one major chain was quoted as saying that people had the money to spend but were not being tempted, particularly in the New York area where "The average sales person is just not interested in selling. He doesn't give the service nor try to move the goods." Perhaps it will be discovered in due course that the consumer is no longer in the hapless position in which he was placed during the war when he had to take what was offered him—or else. With the present abundant supply of all essential items, he can take his trade to stores in which he is treated with courtesy and consideration.

* * *

SUGGESTION TO DESIGNERS OF NEW AUTOMOBILES: One CR subscriber wants the old side pocket that used to be found inside the door next to the driver put back. He commented that it was never in the way and was really convenient for items needed on short notice such as car license, road map, bridge tickets, and change for parking meters.

* * *

CHEMICAL ICE CONTROL PRODUCTS are available in a considerable variety of brand names. They are put out by chemical specialty companies in 10 to 25 pound packages and are designed to be sprinkled on the driveway and sidewalk to solve the problem of roughening and breaking up a solid sheet of ice. The essential ingredient is usually sodium chloride (salt) or calcium chloride, occasionally with traces of other elements, reports Business Week. Rock salt, often used in large quantities on city pavements, doesn't all dissolve and sometimes leaves gravel-like crystals or a white dust that gets tracked into buildings and causes damage to floor coverings. In order to save her floors and floor coverings, the housewife should see to it that the ice control products are not tracked into the house. Calcium chloride has a serious corroding effect on metals used in automobiles.

* * *

GOOD HEALTH, RESISTANCE TO DEGENERATIVE DISEASES, and a prolonged life span are promoted by the proper food intake, according to Dr. W. C. Martin, who recommends a diet low in carbohydrates [sugars and starches], low in fat, high in protein [meat, fish, eggs], and high in foods that contain natural vitamins and minerals, with a restricted intake of refined foods.

* * *

PRICE FIXING of the kind sometimes known as "fair trade" has been legalized in 41 states. Several court cases attacking the validity of various "fair trade" laws are expected to get a hearing this coming year, and there is some indication that the U.S. Department of Justice may take a strong stand against such laws on the ground that they are inconsistent with the philosophy of the anti-trust laws, according to The Wall Street Journal. Cut-rate and discount buying houses in many sections have effectively challenged the system of retail price maintenance and are increasing their lists of steady customers, an indication that consumers find prices are "fixed" too high at the present time on many products.

(The continuation of this section is on page 35)

Triumph TR-2

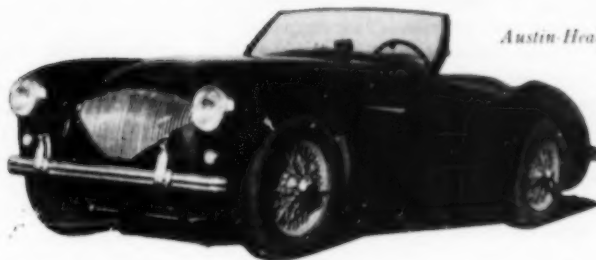


Three

Popular

Sports Cars

Austin Healey 100



Jaguar XK120



THERE is a tremendous interest in sports cars like the *MG* and the *Jaguar* at the present time. At least one department store has featured sports car clothes, and many fashion columns discuss the kind of clothes, even to shoes, that are suitable for wear in a *Jaguar*, both for men and women. In fact, the *Jaguar* and some of the more expensive sports cars have become a "mark of distinction" and of social standing. In certain circles, a family *must* have a *Jaguar* in addition to a *Cadillac*.

It must be noted that the interest in sports cars is all out of proportion to the number of these cars sold. These swank new cars have become a favorite topic for dinner conversation, even though the sales are negligible compared to the best known American cars. For the first six months of 1954, less than 6000 imported sports cars were sold in this country—a number no larger than Ford or Chevrolet turn out in a day and a half of factory operation.

One reason for the small volume of sales is the simple matter of price. The price range is from \$2000 up, with the sky the limit. The *MG*, for

example, sells for around \$2100 and the *Jaguar* sells for \$3300 and up—and the top can go above \$20,000, for the Spanish *Pegaso*.

The high price is not the only deterrent to sales; important, too, is the fact that most sports cars seat only two people, and often not too comfortably. In a good many sports cars, the baggage space is distinctly limited. The sports car is not for the one-car family (unless there are only two in the family); it is best looked upon as an auxiliary car, because of its limited passenger and baggage carrying capacity.

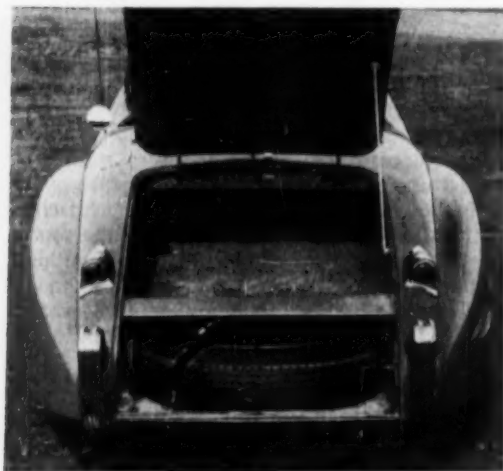
There are several characteristics of the sports car: In the fan's vernacular, it must have high performance as to speed and acceleration to make it suitable for use in competitive events. The car must also handle well on the highway for everyday use.

According to the automotive designer Brooks Stevens, writing in *Car Life*, a true sports car is relatively light in weight, is a 2-seat roadster-type automobile with a high power-to-weight ratio, "electrifying" acceleration, adequate braking, and virtual race-car cornering ability. A

true sports car has a windshield, and adequate emergency weather protection equipment, as well as regulation lighting equipment.

The engine of the sports car is very efficient with respect to horsepower per cubic inch displacement; that is, its highly refined engine produces a lot of power for its size. The car will have a transmission with as many as five speeds forward, and its gears are shifted manually (and require a lot of shifting in city traffic). The steering is quick and precise. The suspension is designed to give the maximum amount of roadability (which means the car is easily controlled) at high speeds. The brakes are powerful and are intended to withstand hard use. The car will often have "dramatic lines" but it will have a minimum amount of the trim and gadgets—such as push-button window lifts and motor-operated top—which are unnecessary for safety and high performance.

The man or woman who yearns to own a sports car must decide whether it is a pleasure, for him, to ride in the open air with the top down most of the time. (There are *Jaguar* models available with a "hard top.") Another consideration is the riding comfort on a seat that is close to the floor so that one's legs are stretched out almost horizontally. The effect is very different from riding in a conventional automobile, and the difference is particularly unfavorable to the sports car on rough, cobbled, rutted, or patched roads. With the sports car, the top will be manually operated, and in dirty weather, you will be lucky to keep the rain off by hooking up curtains on the sides. In the



Many sports cars have little baggage space. The car shown is the *Jaguar*.

winter, the going may be drafty and snow may blow in with the breeze.

Assuming that you want a sports car, that you have counted the costs and inconveniences, and that you have the money in hand for an outright purchase or a sizeable down payment, you should give a good deal of thought to the matter of repairs and maintenance, for you are likely to have to do your own work at least on repairs of a minor nature, unless you are located in a big city and near a service station for your particular make. Service charges when provided by professionals will be high, and there will often be questions of delay and extra expense if parts should be needed. In view of the small sales of sports cars, there is no likelihood there will be any extensive distribution of properly equipped service stations and appropriately-skilled mechanics throughout the country, and there will be many sections of the country where it will be a matter of driving hundreds of miles to find even a minor part for replacement, such as a fuel pump or cylinder head gasket if needed in a hurry, and perhaps an equal distance to find a mechanic conversant with mechanical details of a particular car. Some of the better parts distributors for the foreign cars do make it a point to handle requests for parts very promptly on a mail-order basis, although it has been known that parts have had to be sent by air mail from abroad for certain models in emergencies.

Even if you are accessible to a good service station, you must plan on fairly frequent trips for tuning the engine if you want good performance, because the high-performance engine is much more affected by little things than the engine of the American family sedan, and requires continual attention—another reason for planning to be your own mechanic to a considerable extent.

The safety factor must be considered in heavy traffic areas. Sandwiched between two huge trucks, the low sports car will often not be noticed. The complete wrecking of a small car in a spectacular accident on a heavily traveled highway was recently reported in a New York paper. In this incident, one truck driver attempting to pass another crashed into a small car which was concealed by the larger truck.

Some sports cars are easily damaged by being bumped by a larger car because their bumpers are low or small and so not adapted to dealing with an impact from a large American car. It is reported that small cars are sometimes bumped by bigger cars in parking, because the driver does not see the low small car.

Many people find it inconvenient and awkward to get into the sports car and out again because of the low seat, the small door, and the low-slung steering wheel. This will depend upon one's height and build to some extent. Those who are used to the more powerful American cars which do practically everything in top gear may be disappointed that they have to shift gears frequently, and with skill, with the sports car, on hills and in traffic, since sports cars do not have automatic transmissions and the engine must be operated at fairly high speed to obtain good power output. Getting the most out of a sports car and driving it safely in close quarters requires skill which many American drivers do not have, or have lost. The sports car engines with overhead valves, high engine speeds, and a small muffler will be a good deal noisier than cars of American makers.

The high performance car is not at its best in running slow, and the engine may overheat in traffic in hot weather; when this happens, one must pull over to the curb and give the engine time to cool off before resuming the journey.

The more popular sports cars, such as the *MG* and *Jaguar*, have a rate of depreciation comparable to average American cars. This holds true in areas where sports cars are popular, but where there are few or no sports car devotees, the depreciation may be extra high. In general, it is very risky to buy a used sports car because the sports car is often run hard or mistreated, and the owner may be trading it in because its performance is deteriorating and because bringing it up to par would be too expensive for the results secured. Too often the sports car offered on the secondhand market has already had its best days, and if it is to be run with full satisfaction by its new owner, will need an expensive overhaul. Certainly no one but an expert with long experience with automobiles and some experience with sports cars would be advised to buy a secondhand sports car except from someone whose careful use and attention to the car is well known to the prospective buyer. The sports car authority, Tom McCahill, cites an example of a *Ferrari* advertised "as new," but an expert estimated that repairs costing four to five thousand dollars were needed. (A new *Ferrari* costs over \$10,000.) For the cheaper and more popular sports cars, a general overhaul of engine and other vital parts may easily run to \$300 or \$400 or more.

Now to consider some of the good features. There is no doubt that many people buy a sports car because it is fun to drive. It is small, maneuverable, steers quickly and precisely; it can negotiate a turn or curve more easily and

faster than the ordinary family car, because it has been designed primarily for roadability and without an attempt to get the "soft ride" which characterizes most popular American cars. There is a large element of skill in driving a sports car, a feature that appeals to many who find driving a conventional American car a bit dull. The fact that the car is radically different in appearance and feel is also an attraction, and the sports car has a distinct appeal to the crack driver who knows a lot of things about engines and transmissions that the average man never bothers to learn. The car often has an appeal for the skilled amateur because it is a beautiful piece of machinery that any craftsman in the automotive field can take pleasure in maintaining.

Women will like the little sports car—in fair weather—because it is phenomenally easy to park. The fashion-conscious person who drives a sports car is sure to be the center of interest of everyone in the vicinity. No doubt this explains why there is a sudden rash of sports car fashions and notes on what a guy or gal should wear in a *Jaguar*. The sports model is not for the shrinking violet or a modest retiring soul who wishes to be inconspicuous; but there are people whose temperament is to be noticed and talked about, and the sports car is a "natural" for them.

CR's Tests

In order to provide technical information that would permit a comparison of the more popular sports cars with the conventional American cars that CR has tested for the past two decades, three makes that are currently very popular,



Note lack of adequate bumper protection, a not uncommon fault on European-made sports cars. The car shown is the Triumph TR-2.

Jaguar, *Austin-Healey*, and *Triumph*, were subjected to the same performance tests and examinations as are customarily given to provide a basis of engineering evaluation of American cars.

The three cars in this test, plus the *MG*, are the four largest selling imported sports cars. In sales for the first six months of 1954, the *Jaguar* is first, followed by the *MG*, *Austin-Healey*, and *Triumph*, in order. Of the three cars in this test, none stood out above the others in all respects, but each one was outstanding in some qualities. Overall, the *Jaguar* was superior to the *Triumph* and *Austin-Healey*, but it was also the most expensive. The *Jaguar* was considered to be the best in handling, steering, cornering, braking, and engine performance. It also was the quietest-running of the sports cars tested. The *Austin-Healey* struck a mean between the *Jaguar* and the *Triumph* in most of these qualities and was equal to or very slightly better than the *Jaguar* in acceleration in the middle ranges. In two respects, interior appointments and gear shifting, the *Austin-Healey* was considered the best of the three cars. The *Triumph*, besides having the lowest delivered price and the best fuel economy, was the easiest of the three to service, and had the best clutch action and driving compartment arrangement and controls.

In order to facilitate quick comparison with the conventional American cars, the specifications and performance data for three American four-door sedans have been included in the accompanying table. The 1954 *Ford* and *Buick* are low-priced and medium-high-priced cars, respectively, with V-type, overhead-valve engines of large bore and short stroke, conforming to the latest trends in design. The 1953 *Chrysler* 6-cylinder engine, an in-line type with side valves and small bore in comparison to the length of the stroke, is characteristic of pre-war and early post-war American production. This long-stroke engine produced its maximum torque and horsepower at lower engine and car speeds than the others listed (see table). The new V-8's found in *Ford*, *Mercury*, *Lincoln*, *Oldsmobile*, *Buick*, *Cadillac*, *Dodge*, *DeSoto*, *Chrysler*, and *Studebaker* have characteristics more like sports car engines—they develop their top torque and horsepower at fairly high speeds. However, friction losses and piston travel (an indication of the wear rate) are low in the V-8's due to the short stroke and low axle ratios used. The sports cars tested had long-stroke engines, but piston travel was reasonably low when cruising because the top gear ratio was low.

The brake area and the brake factor (brake factor figures are obtained by dividing the brake area in square inches by the shipping weight of

the car plus 750 pounds for a sedan, or 300 pounds for the sports car) illustrate the fairly large differences between the sports cars and American cars. The sports cars have a considerably larger area of brake lining in proportion to car weight (higher brake factor) and can be expected to hold up well in hard use.

Steering wheel turns (from full left to full right) show another important difference between the cars. The sports cars have low steering ratios (resulting in few turns) for quick action, while American cars (without power steering) have high ratios to overcome the resistance of big, mushy tires holding up the all-too-heavy front end.

The ratings of the sports cars do not take price into consideration, and apply to their use as sports cars and for pleasure driving, and not as general utility cars. They are not recommended as substitutes for the family sedan, and are not intended to be.

A

Jaguar XK120 Super Sports. \$3410 delivered Pa.

Heater is standard equipment.

Over-all performance and handling qualities were considered to be very good. In spite of some objectionable features, the *Jaguar* is considered an outstanding, high-quality sports car, which well deserves its high standing among the critical sports car enthusiasts.

CR'S FINDINGS ON ROAD TESTS

Gasoline mileage at constant speed on level road: at 30 m.p.h., 23.8 m.p.g.; at 50 m.p.h., 19.4 m.p.g. (better than most American cars—see table).

Acceleration times from 0 to 60 m.p.h. (shifting at 5000 rpm.), 11.5 sec.; from 20 to 50 m.p.h. in third gear, 8.7 sec.; in fourth gear, 11.7 sec.; from 40 to 60 m.p.h. in third gear, 6.4 sec.; in fourth gear, 8.5 sec. In the ranges tested, the acceleration of the *Jaguar* was slightly inferior to that of the most powerful American cars.

OBSERVATIONS AND CONCLUSIONS

The ride, of course, was stiff and must be accepted as a sports car characteristic. The acceleration was very good in all ranges tested. The steering was precise and sufficiently fast, the effort required was slight, and the control of the car was very good. The cornering ability was excellent and better than *Triumph* and *Austin-Healey*. The brakes were adequate for high-speed driving, but required more than average pedal pressure. The noise level of the engine, transmission, and wind were low for a sports car, and only at very high engine speeds was noise particularly noticeable. The interior space was barely adequate for two people. Entering on the driver's side was difficult because of the interference of the steering wheel. The space above the clutch pedal was limited, and the panel under the dash interfered with movement of the foot. Clutch pedal pressure was high, and shifting of the gears could not be done

JAGUAR XK120 SUPER SPORTS SPECIFICATIONS

Engine

6 cyl. in-line with overhead valves and 2 overhead camshafts
Bore, 3.57 in.; stroke, 4.17 in.
Disp.: 310 cu. in. (5048 cc.)
Brake hp. (rated): 160 at 5200 rpm.
Comp. ratio: 8 to 1, or 7 to 1
Cylinder head: aluminum alloy
Crankcase oil capacity: 11-1/2 qt.
Oil filter: full-flow
Cooling system: 15-1/2 qt.

Chassis (cont'd)

Brake area: 208 sq. in., 68.8 sq. in. per 1000 lb. of car weight with 2 passengers (exceptionally good, 50% better than the best American car in this respect)
Frame: X, with heavy box side members and 4 cross members
Minimum clearance: 6.8 in.
Turning diameter: 31 ft.
Steering wheel turns, full left to right: 3-1/4

Other details

Battery: 12-volt 64-amp.-hr. (two 6-volt)

Chassis, etc.

Wheelbase: 102 in.
Over-all length: 173.5 in.
Width: 61.5 in.
Height, maximum: 52.5 in.
Axle ratio: from 3.27 to 1 to 4.3 to 1, 4 speeds forward
Tires: 6.00 x 16 (adequate)

Gasoline tank: 17 gal.
Windshield wipers: electric
Shipping weight: 2745 lb.
Curb weight: 3000 lb., 47% on front, desirable (most American cars have over 50% of the weight on front wheels)

as smoothly as with the *Austin-Healey* or *Triumph*. Visibility with the top down was good except that the rim of the high steering wheel interfered with the view and the size of the rear-view mirror was inadequate. With the top up, visibility to the rear was poor. Baggage space was very small (see picture) by American standards.

A

Austin-Healey 100. \$2985 delivered Pa. Heater and overdrive are standard equipment.

Over-all performance and handling qualities were considered to be very good. The *Austin-Healey* was considered to be a well built and well appointed sports car, though not quite on a par with the *Jaguar*.

CR'S FINDINGS ON ROAD TESTS

Gasoline mileage at constant speed on level road: at 30 m.p.h., 31.7 m.p.g.; at 50 m.p.h., 31.3 m.p.g. (very good, better than any 1954 American car tested).

Acceleration times from 0 to 60 m.p.h. (shifting at 4000 rpm.), 12.9 sec.; from 20 to 50 m.p.h. in third

gear, 9.5 sec., in overdrive-second, 8.5 sec.; from 40 to 60 m.p.h. in overdrive-third, 8.7 sec., in third gear, 6.6 sec., in overdrive-second, 6.3 sec. In the ranges tested, the acceleration of the *Austin-Healey* was slightly inferior to that of the most powerful American cars.

OBSERVATIONS AND CONCLUSIONS

The ride was stiff, as in the other makes tested. The steering was fast and precise, and the control of the car was very good. Cornering ability was very good. The brakes were adequate and required only moderate pedal pressure. The engine and exhaust noise was greater than that of the *Jaguar*, but about average for a sports car. Wind noise was moderate (less with top down). The leg room was adequate, but entering and leaving the car were inconvenient. Gear shifting could be done rapidly, with no clash (better than the *Jaguar* tested, in this respect). Visibility was good with the top down, but the low seating position relative to the hood would restrict the view of the road for a short person. Visibility was good to the rear even with the top up. Baggage space was fairly good (larger than in *Jaguar*). Road clearance very small, compared with American cars, and even with the two other British sports cars.

A-

Triumph TR-2. \$2519 delivered Pa. Heater, \$50; overdrive, \$154. Car tested did not have overdrive.

Over-all performance and handling qualities were good but not outstanding. The *Triumph* did not have the performance and roadability of the *Jaguar* or the *Austin-Healey*, but in view of its substantially lower price is considered a very good buy in the sports car field.

CR'S FINDINGS ON ROAD TESTS

Gasoline mileage at constant speed on level road: at 30 m.p.h., 38.5 m.p.g.; at 50 m.p.h., 32.5 m.p.g. (very good, better than any 1954 American car tested).

Acceleration times from 0 to 60 m.p.h. (shifting at 5000 rpm.), 12.6 sec.; from 20 to 50 m.p.h. in third gear, 9.8 sec., in fourth gear, 14.7 sec.; from 40 to 60 m.p.h., 10.9 sec. In the ranges tested, the accelera-

AUSTIN-HEALEY 100 SPECIFICATIONS

Engine

4 cyl. in-line, overhead valves operated by push-rod
Bore, 3.4375 in.; stroke, 4.375 in.
Disp.: 162.2 cu. in. (2660 cc.)
Brake hp. (rated): 90 at 4000 rpm.
Comp. ratio: 7.5 to 1
Cylinder head: cast iron
Crankcase oil capacity: 7 qt.
Oil filter: full-flow
Cooling system: 12 qt.

Chassis (cont'd)

Tires: 5.90 x 15 (adequate)
Brake area: 145.2 sq. in., 59 sq. in. per 1000 lb. of car weight with 2 passengers (very good)
Frame: X, with 3 cross members
Minimum clearance: 3-3/4 in. at tailpipe, 4-3/4 in. at muffler
Turning diameter: 35 ft.
Steering turns, full left to right: 2-1/3

Other details

Battery: 12-volt 63-amp.-hr. (2 6-volt)
Gasoline tank: 14-1/2 gal.
Windshield wipers: electric
Shipping weight: 2175 lb.
Curb weight: 2305 lb., 48.5% on front, desirable (see *Jaguar*)

Chassis, etc.

Wheelbase: 90 in.
Over-all length: 151.5 in.
Width: 60.5 in.
Height, maximum: 49 in. over top
Axle ratio: 4.125 to 1 (or 3.60 to 1), 5 speeds forward

TRIUMPH TR-2 SPECIFICATIONS

Engine

4 cyl. in-line, overhead valves operated by push-rod
Bore, 3.308 in.; stroke, 3.622 in.
Disp.: 121.5 cu. in. (1991 cc.)
Brake hp. (rated): 90 at 4800 rpm.
Comp. ratio: 8.5 to 1
Cylinder head: cast iron
Crankcase oil capacity: 6-1/2 qt.
Oil filter: by-pass
Cooling system: 8 qt.

Chassis (cont'd)

Brake area: 148 sq. in., 65 sq. in. per 1000 lb. of car weight with 2 passengers (exceptionally good)
Frame: X, with 3 cross members
Minimum clearance: 6 in.
Turning diameter: 32 ft.
Steering turns, full left to right: 2-1/3

Other details

Battery: 12-volt 51-amp.-hr.
Gasoline tank: 15 gal.
Windshield wipers: electric
Shipping weight: 1990 lb.
Curb weight: 2110 lb., 52.5% on front, weight distribution not as desirable as on *Jaguar* and *Austin-Healey*

Chassis, etc.

Wheelbase: 88 in.
Over-all length: 151 in.
Width: 55-1/2 in.
Height, maximum: 50 in.
Axle ratio: 2.7 to 1, 4 speeds forward
Tires: 5.50 x 15 (adequate)

tion of the *Triumph* was not as good as the more powerful American cars.

OBSERVATIONS AND CONCLUSIONS

The ride was stiff, as in the other sports cars tested. The steering was fast, but some effort was required to maintain a true course as the rear end did not track as well as those on the *Jaguar* or *Austin-Healey*,

especially on rough pavement. Cornering ability was not as good as the *Jaguar* or *Austin-Healey*. The brakes were adequate (required more pedal pressure than with the *Austin-Healey*, but less than the *Jaguar*). Engine noise was that typical of sports cars, but wind noise was higher than with *Jaguar* or *Austin-Healey*. Leg room was good, but entering and leaving the car was inconvenient. Gear shifting

	Triumph TR-2	Austin- Healey 100	Jaguar XK120	1954 Ford V-8 ¹	1954 Buick Century ¹	1953 Chrysler Windsor ¹
Wheelbase (in.)	88	90	102	115.5	122	125.5
Over-all length (in.)	151	151.5	173.5	198.5	206.5	211
Weight (lb.)	1990	2175	2745	3335	3885	3770
Percent of weight on front	52.5	48.5	47	57.5	54.5	53
Brake area (sq. in.)	148	145.2	208	174	208	201
Brake factor ²	65	59	68	43	45	45
Steering wheel turns	2-1/3	2-1/3	3-1/4	3-7/8	4-1/4	5
Road clearance (in.)	6	3.8	6.8	6.6	6.5	7.6
Tire size	5.50 x 15	5.90 x 15	6.00 x 16	6.70 x 15	7.60 x 15	7.60 x 15
Percent overload on tires	none	none	none	10	6	none
No. of cylinders	4	4	6	8	8	6
Compression ratio	8.5	7.5	8	7.2	8.5	7
Bore and stroke (in.)	3.268 x 3.622	3.4375 x 4.375	3.27 x 4.17	3.5 x 3.1	4.0 x 3.2	3.4375 x 4.75
Piston displacement (cu. in.)	121.5	162.2	210	239.4	322	265
Rated hp. at rpm.	90 @ 4800	90 @ 4000	160 @ 5200	130 @ 4200	200 @ 4100	119 @ 3600
Lb. car weight per mfr.'s rated hp.	22	24	17	25.5	19	31.5
Rated hp. per cu. in. displacement	.74	.55	.76	.54	.62	.45
Rated maximum torque at rpm. (lb.-ft.)	117 @ 3000	144 @ 2000	195 @ 2500	214 @ 2200	309 @ 2400	218 @ 1600
Over-all ratio in top gear	3.7	3.12	3.54	3.54	3.4	3.73
Engine rpm. at 60 m.p.h. in top gear	3020	2460	2610	2650	2470	2710
Piston travel in 1 mile in top gear (ft.)	1820	1780	1810	1370	1320	2150
M.p.h. for maximum hp., top gear	95	97.5	119.5	95	99.5	80
M.p.h. for maximum engine torque, top gear	59.5	49	57.5	50	58	35.5
Acceleration time in seconds:						
0-60	12.6	12.9	11.5	—	—	—
20-50	9.8	8.5	8.7	10.0 ³	8.4 ³	10.5 ³
40-60	10.9	6.3	6.4	9.8 ³	7.8 ³	12.7 ³
M.p.g. at 50 m.p.h.	32.5	31.3	19.4	16.3	16.8	16.7

¹The American cars were 4 door sedans equipped with automatic transmissions.

²Brake factor is the number of square inches of brake lining for each 1000 lb. of car weight, with normal load of passengers, of 300 lb. for sports cars, 750 lb. for American sedans.

³Acceleration tests were made with transmission in normal or "drive" range.

could not be done as rapidly and smoothly as with *Austin-Healey*. Visibility was good, except to rear when top was up. The car had no provision for bringing in fresh air to the passenger compartment when wanted, with top up and side curtains in place. In warm rainy weather, the lack of ventilation could cause discomfort to driver and passenger.

* * *

Editor's Note: The foregoing article does not

include one of the most widely sold and lowest priced of the popular English sports cars, the *MG*. The reason is that at the time the tests were made we were informed that a new model of the *MG* was soon to be announced. CR has obtained delivery on a new model *MG* and will test and report on it in an early issue of CONSUMERS' RESEARCH BULLETIN.

Fuel Oil Tanks

Size of storage tanks

About three of every four oil burners are installed with 275-gallon tanks. These serve well enough so long as there is no reason to expect serious interruptions in the oil supply. Larger tanks have several advantages. An important one is the greater independence and security afforded during longer-than-usual periods of stormy weather or deep snow. Moreover, the fire hazard is considerably less when the tank is buried outside. In many localities, oil purchased in larger quantities at a single delivery carries a discount (check with your local distributor). Likewise, a greater number of gallons can be purchased at off-season prices where lower summer prices prevail for fuel oil. The buried tank will usually give less trouble from corrosion and sludge. A final point is that larger tanks are of thicker material and so will usually last longer.

In 1953, the average cost to supply and install a conversion burner with a 275-gallon tank was approximately \$370; an additional 275-gallon tank installed at the same time cost an extra \$80. Those who installed 550-675-gallon tanks buried in the ground paid an average of \$490 for the complete conversion or \$120 more than for the same unit with a 275-gallon tank. The charge for conversions with 1000-gallon tanks was about \$590, or \$220 more than for a conversion using a 275-gallon tank.

Tank failure due to internal corrosion

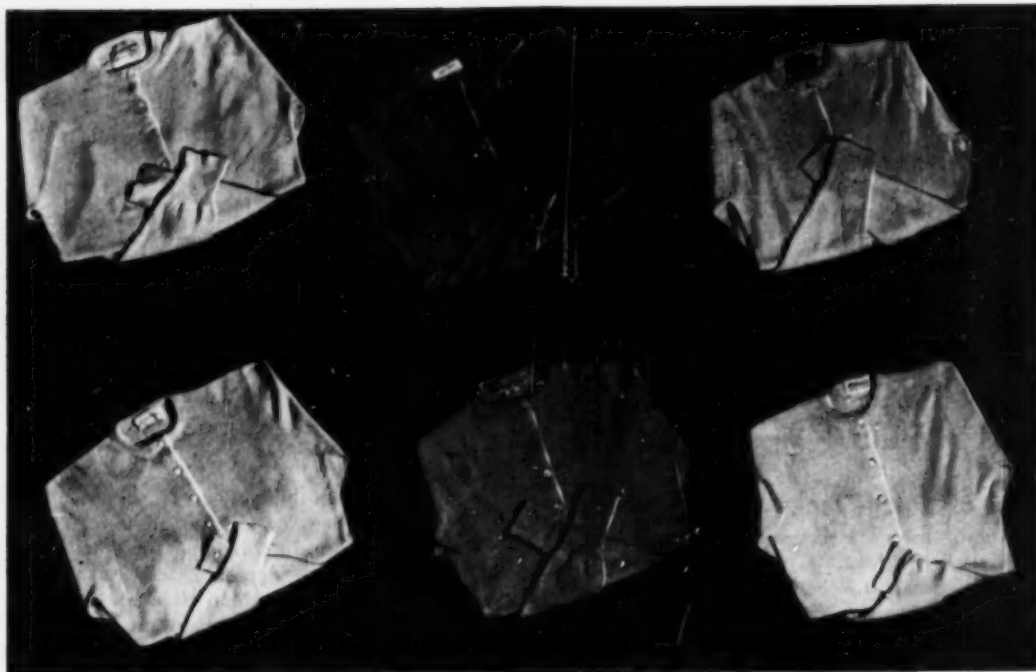
It is water at the bottom of a tank, not oil, that corrodes a storage tank. (The corrosion does not extend above the part of the tank where the water lies.) It has been found that an additive intended to minimize sludge forma-

tion in the oil sometimes cleans the inner surface of a tank so well that the water present is more active than before, in corroding the steel. The whole question is very complicated, and for this reason, the consumer should be cautious about introducing any additive compound into his oil for any purpose. It is best that he should do so only after checking by letter with technically informed persons—engineers or chemists—representing the oil refining companies supplying the oil which he uses.

It is very unlikely that any oil which is delivered will be entirely free from water; salt water gets in from the tanker (sea water is used as ballast in tankers on their return trips), and oil carried in barges is contaminated by small leaks and by storms. One very large fuel oil company, however, claims all shipments are analyzed for salt contamination and rejected if salt is found to be present (other companies may not be so careful). Water enters the oil by condensation from the air in tank cars and trucks in transit and in tanks in storage. The amount of water involved in the destruction of a tank may be very small; it is said that a single tablespoonful of water will eventually eat through the bottom of a tank, if allowed to stand in one spot.

Shell Oil Company supply to their customers without extra charge an inhibitor to control corrosion by water, which is said to have reduced failures of customers' tanks in the territory of one large New England marketer by 87 percent in one year.

Outside storage tanks last several times as long, on the average, as inside tanks. There is a disadvantage with the outside tank that should be noted, however, in that a very small leak might go undetected and cause a loss of fuel oil for a considerable time.



*If you're giving her
a sweater for Christmas*



ONE of the most useful, yet attractive, gifts that can be given for Christmas is a sweater, to be had in a wide variety of styles, colors, prices, and fibers. What girl or woman does not yearn to own a cashmere sweater for its soft, pleasant texture and attractive, fluffy appearance? Prices, however, range from \$10 to \$40, and the fact that a cashmere sweater is "a luxury product," not a sturdy garment, makes such a purchase something of an extravagance for the practical consumer.

This past fall there has been extensive advertising for a number of brands of *Orlon* sweaters, some of which claim to be "cashmerized,"

"luxurious and kitten-soft," "cashmere-y texture," and "rivals cashmere in softness." These sweaters in cardigan styles ranged in price from about \$8 to \$11, somewhat less for the pullover. The fact that they cost about $\frac{1}{5}$ the price of a good cashmere sweater obviously makes them an extremely acceptable substitute if all other factors were equal or nearly so.

Cashmere, according to one of the outstanding trade journals in the field, is the fleece of a group of mountain goats from the central highlands of Asia. The finest cashmere, reports this journal, comes from Red China. It is shipped over a long route served by primitive transportation

and requires nearly a year to reach the Chinese port whence it is shipped to the Western market. Chinese cashmere is slick and silky to the touch and fine in texture since it is taken from the undercoat of the animal. It is light in weight and often mixed with a heavier fiber to give it substance. It is also quite warm.

In view of the fact that trade with Red China at the present time is on a somewhat uncertain basis and that patriotic organizations frown on the purchase of products from this source, one trade columnist has suggested that there is some fear in the market of stocking up heavily on Chinese yarns. He points out that if an embargo on trade with Red China were clamped on suddenly by the federal government cashmere sweaters would likely become museum pieces. Most of the cashmere sweaters in the high price bracket, at least, are imported from Great Britain, a factor which tends to conceal somewhat the source of original fiber. It is reported that the Federal Trade Commission is looking into the question of just what is cashmere, in the light of attempts to bring in fiber of a similar type from other Oriental countries.

The inventiveness of American industry has successfully met many a challenge to provide a substitute for a scarce raw material. Witness the nylon stocking which made silk hose a thing of the past in a few short years. Whether the *Orlon* sweaters will displace the luxurious cashmere remains to be seen and partly depends on public acceptance.

Orlon, a new acrylic fiber manufactured by the duPont Company, has made its appearance in increasing volume since World War II. It is produced from polyacrylonitrile, a chemical compound derived from such basic raw materials as coal, water, air, petroleum, limestone, and natural gases. In its early days it was difficult to dye, but this problem has been solved to a considerable extent. The structure of the fiber is such that it has a dry, warm feeling next to the skin, making it suitable for use in sweaters and socks. One of its chief advantages is that it is resistant to insect damage, an important advantage over wool and cashmere.

CR's Tests

In order to check the performance of some of the better brands, CR purchased five brands of *Orlon* sweaters that were widely advertised, together with an expensive cashmere (to give a basis for comparison).

Several makes of the sweaters tested were also available with bead trimming for evening wear. At least two were identical with the plain cardigans tested except for the added bead trimming

which increased the price by a dollar or two. They would probably wash satisfactorily if care were taken not to snag the threads which sewed on the decorations and if special care were taken to pat the decorations flat on the towel so that they would not cause wrinkling when the sweaters dried.

The sweaters were subjected to four different types of tests including examination of the garment for conformance to measurements for size according to Federal Specifications JJ-S-846; evaluation of the workmanship (using as a guide the pamphlet *Buying Sweaters for the Family*, U.S. Department of Agriculture, 10 cents, March 1952), including shaping, seams, joinings, front openings, buttons, and buttonholes; examination of the fabric to determine the ply of the yarn and knit stitch; laboratory tests to evaluate colorfastness to perspiration, and a Fade-Ometer test for fastness to light according to American Standard L22.1.2, and a laundering test.

The wear tests were conducted by giving each sweater to members of CR's staff to wear daily from 9 to 3:30, when they were collected and laundered according to standard procedures and washing instructions on the hang tags of the sweaters. All sweaters were subjected to 21 wearings and 21 launderings. It should be noted that all sweaters called for hand washing. Some *Orlon* sweaters have been reported to be successfully laundered in an automatic washing machine, but at least one sales girl when queried on this point expressed horror at the idea. The American Institute of Laundering has suggested that *Orlon* should be handled as a wool fiber and points out that temperatures of laundry tumblers and presses can cause excessive shrinkage. The A.I.L. found also that fabrics from *Orlon* fiber have a tendency to form permanent wrinkles during the extracting process, and that white *Orlon* had a tendency to turn yellow when exposed to heat.

All of the sweaters in CR's test were laundered by hand at first in a solution of 0.2 percent *Lux* soap flakes at a temperature of 100°F. They were rinsed for two separate rinses of one minute each in water at a temperature of 100°F, squeezed gently by hand, rolled in two separate Turkish towels, and laid out flat to dry on dry Turkish towels. After the first two washings, the detergent was changed from *Lux* to *Dreft* because of a disagreeable odor that had developed in some of the newly laundered *Orlon* sweaters which made them so objectionable that some wearers refused to put them on. This odor disappeared after several additional washings with synthetic detergent, and there was no recurrence of the

odor when the sweaters were again washed in *Lux* for their twenty-first laundering. The sweaters dried fairly well overnight except for the ribbon band which reinforced the two fronts beneath the buttons and the buttonholes.

On initial appearance, the *Talbott* full-fashioned "cashmerized" *Orlon* compared very favorably with the *Braemar* cashmere. Unfortunately, the *Talbott* did not stand up well in laundering, particularly at the cuffs which lost their elasticity and would not remain in place when pushed up.

The *Braemar* cashmere was subjected to laundering because washing was recommended on the hang tag with the claim "This fine Scottish knitwear keeps its shape, colour, and softness most beautifully—when washed correctly." Parenthetically it might be noted that those who are accustomed to wearing cashmere sweaters often have them dry cleaned by a reliable cleaner in order to avoid difficulties with shrinkage. As a rule, too, sweaters are purchased in a size larger than the normal dress size to allow for dimensional changes.

The final appearance of the cashmere sweater was considered fairly satisfactory, but the shrinkage in washing would have made it unwearable for the purchaser unless it had been purchased in a size or two larger than normally worn, or the sweater had been dry cleaned in spite of the fact that directions called for washing it in soap and water.

The sweaters of *Orlon* fiber were considered equal to the cashmere in comfort and softness to touch. Indeed, two people who apparently had an allergy to animal fibers reported a slight discomfort from wearing the cashmere. For practical wear and handling, the sweaters of *Orlon* were considered superior to the cashmere although not quite its equal in appearance.

All but one of the sweaters received a low *B-Intermediate*, rather than a *C-Not-Recommended* rating, on the principle that as fashion merchandise they might give the service expected of them. Some of the defects noted in the listings may be due to lack of experience on the part of the knitting companies in dealing with *Orlon* fiber, and as knitting companies acquire greater familiarity with the material, the resulting garments will no doubt be improved.

The sweaters which were full-fashioned (knitted to fit under the arms, at the shoulders, and perhaps the neck) did not appear to be substantially better in comfort and appearance than sweaters that were cut and sewn, though their price was \$1 to \$3 higher.

The comments in the listings apply to the sweaters as they were at the conclusion of the

wear tests. Personal customs vary, but it is doubtful whether a sweater would be subjected to 21 laundings in normal use, since a sweater is often part of an ensemble and would normally be worn off and on for perhaps a year and washed only a few times.

None of the sweaters tested met Federal Specifications JJ-S-846 for total length, measured from top of shoulder to bottom front. This may be a matter of fashion, however, which calls for a somewhat shorter sweater this year. All garments failed to meet Fed. Spec. for width. Front openings were all faced with grosgrain ribbon (except that some *Premier* samples had plain ribbon reinforcement), and the cardigan fronts ran with the wale except one; the *Helen Harper Orlon* sweater was found to run off-grain (crooked) at the top. All buttonholes were found to be fairly well made.

In the wear test, a number of wearers complained that the sweaters were cut too high in the neck; the cuffs on all but the *Braemar* cashmere and the *Glasgo Orlon* lost their initial elasticity and would not stay up when pushed into place (the cuffs of the *Helen Harper* sweater were uncomfortably tight for most wearers when it was new, and although it lost its elasticity in laundering, it would stay in place when pushed up if the wearer could tolerate it).

Pilling (development of small balls of fiber) was observable on all *Orlon* sweaters at the conclusion of the laundering test, particularly on the front. The wearers, however, did not find the amount of pilling objectionable in any case.

The colorfastness was good or fairly good on all sweaters included in the test although the color purchased was a light blue, a color often quite susceptible to fading.

The prices indicate the amount paid by CR, exclusive of sales tax. Ratings are cr54.

B. Intermediate

Glasgo Orlon (Glasgo Limited, Inc., 11 W. 42 St., New York City) Blue cardigan, \$10.95. Two-ply yarn. Met Federal Specifications for length of sleeve; failed to meet Fed. Spec. for sleeve opening. Armholes, sleeves, neck, full-fashioned (mark of good construction). Looped seams and joinings (most desirable type). 10 buttons, 2 of which came off in laundering, but were recovered and sewn on again. Cuffs and waistbanding, Swiss or 2x2 rib. Colorfastness to perspiration test and Fade-Ometer, good. Dimensional stability, good; shrinkage in width, 2.7%; gain in length, 1.3%; no change in sleeve length or sleeve opening. Appearance judged good; after 21 washings, fair.

The following sweaters, after 21 washings, all showed dimensional changes to such an extent that they fitted poorly. Since there is no standard to determine just how many times a sweater of this type should withstand laundering satisfactorily, the sweaters are to be considered as receiving a low *B-Intermediate* rating; possibly many wearers would not subject them to so severe a test. These sweaters were judged to be fair in appearance at the conclusion of the test.

Blairmoor Original "Super Full Fashioned Nespun Orlon" (Blairmoor Knitwear Corp., 1410 Broadway, New York 18) Blue cardigan, \$10.95. Two-ply yarn. Met Federal Specifications for length of sleeve; failed to meet Fed. Spec. for sleeve opening. Armholes, sleeves, and neck were full-fashioned. Seams and joinings, looped. 10 buttons. Cuff and waistbanding, 1x1 rib stitch. Colorfastness to perspiration test and Fade-Ometer, good. Dimensional stability, fair; shrinkage in width, 3.5%; gain in length, 3.7%; gain in sleeve length, 1.1%; no change in sleeve opening.

Braemar (Braemar Knitwear Ltd., Hawick, Scotland) Blue cardigan, \$27.95. Marked "100% New Wool" and "All Cashmere." One-ply yarn. Failed to meet Federal Specifications for length of sleeve and sleeve opening. Armholes, sleeves, sides, and shoulders were full-fashioned. Looped seams and joinings. 8 buttons. Cuffs and waistbanding, 1x1 rib stitch. Colorfastness to perspiration, fair; to Fade-Ometer, good. Dimensional stability, poor; shrinkage in width, 7.9% (greatest of all sweaters tested); shrinkage in length, 1.0% (Orlon sweaters all showed gains); shrinkage in sleeve length, 1.2%; shrinkage in sleeve opening, 7.2%. Appearance somewhat matted or felted at conclusion of test.

A Helen Harper Original "Mazet By Milliken,"

100% Orlon Yarn (Blume Knitwear, Inc., 1372 Broadway, N.Y.C.) Blue cardigan, \$7.98. One-

ply yarn. Failed to meet Federal Specifications on length of sleeve and sleeve opening. Cut and sewn garment (not full-fashioned). Merrowed seams (raw edges stitched together and covered to prevent raveling) and joinings (poor); covering stitches widely spaced. 9 buttons. Cuff and waistbanding, Swiss or 2x2 rib. Colorfastness to perspiration test and Fade-Ometer, good. Dimensional stability, fair; shrinkage in width, 3.8%; gain in length, 0.6%; gain in sleeve length, 0.7%; gain in sleeve opening, 1.6%. Only sweater in which front was off grain (crooked) at top.

Premier "Exclusively Resilinated Super Nespun

Orlon" (Premier Knitting Co., Inc., 1410 Broadway, N.Y.C.) Blue cardigan, \$7.95. One-ply yarn. Failed to meet Federal Specifications on length of sleeve. Only sweater that met Fed. Spec. for sleeve opening. Cut and sewn garment (not full-fashioned). Merrowed seams and joinings (poor); covering stitches widely spaced. 9 buttons; one came off in laundering, but was recovered and sewn on. Cuff and waistbanding, Swiss or 2x2 rib. Colorfastness to perspiration test and Fade-Ometer, good. Dimensional stability, fair; gain in width, 0.7%; gain in length, 5%; gain in sleeve length, 0.8%; no change in sleeve opening.

Talbott Cashmerized 100% Super Orlon (Talbott

Knitting Mills, 1407 Broadway, N.Y.C.) Turquoise cardigan, \$8.95. Two-ply yarn. Failed to meet Federal Specifications for length of sleeve and sleeve opening. Armholes, sleeves, shoulders, and neck were full-fashioned. Seams and joinings, looped. 10 buttons; 2 extra buttons furnished slightly darker than those on sweater. Cuff and waistbanding, 1x1 rib. Colorfastness to perspiration test, good; to Fade-Ometer, fair. Dimensional stability, fair; shrinkage in width, 3.8%; gain in length, 3.7%; no change in sleeve length; shrinkage in sleeve opening, 0.8%.

Corrections and Emendations to Consumers' Research Monthly Bulletins

Which Camera? The statement "Kodachrome film, the best color film available, is sold *only* in 35 mm. size for still cameras" should be changed to include *Bantam* size film (8 exposures, 1-1/8 in. x 1-9/16 in.), which is also available in *Kodachrome*.

Iloca Quick A. Delete "Made in Eastern (Russian) Zone of Germany." This camera is made by Witt in Hamburg (Western Germany).

Which Camera? **Iloca Quick B.** Delete "Made in Eastern (Russian) Zone of Germany." This camera is made by Witt in Hamburg (Western Germany).

Diax Ia. Alco Corp. of N.Y. are no longer distributors of this camera. The present distributors of *Diax Ia* in this country, if any, have

not been located. Delete "Made in Eastern (Russian) Zone of Germany." This camera is made by W. Voss in the city of Ulm/Donau (Western Germany).

Note to Subscribers Through a printer's error, 1/8 inch was given instead of 1/4 inch as the size of *No. 140* **Bernard by Sargent Multi-Power**

Punch. (Note: The comment should perhaps be made that this device, while satisfactory for punching holes in CR's monthly BULLETIN, is not recommended for thick pamphlets or booklets, or papers approaching the 7/32 inch nominal thickness capacity of the punch. The punch should be redesigned for greater strength, or the thickness capacity, as determined by the jaw opening, be reduced.)



Photo by Werner Wolff of Black Star

The drying effectiveness of the hair dryers was compared in a laboratory test by determining how fast each dryer removed water from a "cage" of strips of moist blotting paper.

FOR THE TECHNICALLY MINDED READER

Those interested in the techniques of conducting tests on appliances may find CR's method of interest. The "cage" consisted of 70 vertical blotter strips spaced uniformly in a frame. The device was set in a tray containing water, and both were weighed before the dryer was turned on. Each dryer was set six inches from the "cage" and so placed that the air stream was directed against the center of the first row of blotter strips. The dryer was turned on, and the weight of the frame and its blotters was checked after five minutes and again after ten minutes of operation. The rate of loss of weight caused by the drying action of the dryer under test gave a measure of the effectiveness of the dryer in removing moisture from the hair.

Electric Hair Dryers

SHAMPOOING the hair once a week is not unusual in American homes, especially for women who know that their hair styles will look best if the hair is clean and shining. The fashionable casual cuts, for example, require a lot of non-casual care if they are to be attractive. Hair drying at home, however, can be a chore—or at least inconvenient—and a good hair drying appliance can help greatly. Almost any woman who does not have one would be glad to find a hair dryer under the Christmas tree.

She will, of course, expect the dryer to have a heating element and a fan to provide a brisk flow of warm air for drying. A good hair dryer will be quiet in operation, and will not become unpleasantly warm during the period of use. A stand is a convenience, and one that permits the dryer to be adjusted or tilted to different angles is more useful than a non-adjustable stand. The base of the stand should be smoothly finished or should have rubber feet of some kind so as not to mar the surfaces on which it is placed.

Because a home hair dryer will often be held in the hand for the drying period, light weight is desirable, and the shape of the handle or the dryer should be convenient and comfortable to

the hand. Plastic, which is light in weight and does not conduct heat as readily as metal (and thus remains cooler), is used in a good many dryers; the plastic affords some safeguard, too, against electrical shock, in the event of an electrical failure in the dryer. It is important that the plastic or other material used, however, will withstand without failure or distortion the temperatures created by the heating element.

CR bought nine electric hair dryers and subjected them to laboratory tests. The dryers were also used by young women on CR's staff and by students in the home-management house of a women's college. As might be expected, none of the dryers was nearly so fast in action as the hood-type dryers used in beauty parlors, and the dryers tested by CR took about twice as long as a professional dryer to dry a woman's hair. The women on CR's staff, however, preferred the electric hair dryers to a "magic cap" hair dryer which was tried at about the same time. (See illustration.)

The college girls were frank in expressing their likes and dislikes as to the dryers, and found it objectionable that some manufacturers did not supply directions for their appliances. There

were no instructions for five of the dryers. Dryers that had on-off and hot-cold indications on the switches were preferred. Such marking is almost indispensable and should be standard practice with all electrical appliances in CR's opinion. There was no marking on the switches of three of the dryers. Some dryers had no switch for the fan, which, on these, ran at once when the plug was inserted into the electric outlet. Lack of a fan switch was an inconvenience, but an advantage from the safety standpoint, since the user of the appliance would have to disconnect it from the power circuit to turn it off.

Quietness in operation was judged an important point. Unfortunately, the five dryers that made the least noise were less effective in removing water and gave relatively poor air flow as compared with all but one of the noisier dryers. The same five relatively quiet dryers also gave little or no radio and television interference. Two other dryers gave noticeable radio and television interference, and two were considered seriously objectionable in this respect.

CR found that opinions regarding the comfort of the warm-air flow from the dryers were inconclusive and should not be given weight in rating them. A dryer that one user thought "too hot" was "too cool" for another. Much seemed to depend on how close the dryer was to the head, the thickness of the hair, the hair style, and other factors.

As with all electric appliances, safety to the user is of greatest importance in a hair dryer. This is especially true of an appliance which may be used in a bathroom at times, for, as everyone knows, the combination of moisture and electricity presents a particular risk of shock hazard in case the appliance should develop a fault through wear or misuse. A hair dryer, like any other appliance, should not be used if it shows the slightest sign of being out of order mechanically or gives even a faint shock. Incipient mechanical or electrical trouble may be a warning of development of a dangerous shock hazard



The Wonderway Dryer Cap

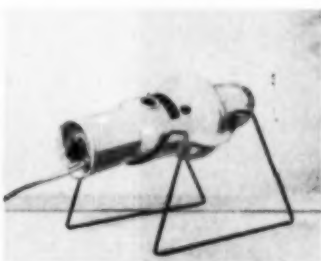
This cap is made of calico and filled with silica gel, a drying chemical. It was bought at \$2.95 by mail from the J. H. Pierce Co., Greenfield, Mass. Users found it uncomfortable to wear, and found it inconvenient to have to heat it in an oven for 45 minutes or more before each use.

or other type of failure. All the dryers had a low leakage current, an indication of negligible shock hazard, under room conditions and under humid-air conditions also, except for two which had slight shock hazard when the air was damp, as noted in the listings. All of the dryers passed breakdown tests under normal and high-humidity conditions, indicating probable good durability of the electrical insulation.

Of the nine hair dryers tested, six had fuses or some other device to protect the heating element against overheating. Three of the six had a bi-metallic thermostat which cut off when dangerous temperatures were reached; these thermostats reset themselves afterwards without need for attention on the part of the user or the services of a repairman. The other three dryers had a thermal cut-out involving melting of an alloy,



Gilbert



Solia Ru-Rita



LeJohn

or bit of fuse wire which would require service or replacement by a repairman or a skilled home mechanic before the dryer could be used again. Some protection against overheating was considered desirable, and the bimetallic thermostat was judged to be much more practical than other means used.

B. Intermediate

LeJohn, Model DA-3 (LeJohn Mfg. Co., Huntington, W.-Va.) \$5.95. **1**

Convenient to use, but no on-off marking on heater switch. Finish unattractive compared with some of the others, and paint began to peel from the nozzle before the tests were completed.

Description: 347 watts, 115 volts, 60 cycles, a.c. only. Weight, 1 lb. 13 oz. (about average). Burgundy-and-blue painted metal housing with wood handle. Metal stand with padded seat permitting vertical adjustment of dryer. There was no switch for the fan, and the rotary switch for heating element was not marked to show on and off positions. Had bimetallic thermostat to protect heating element.

Performance: Fair to good water-removing ability, and fair air flow. Good stability. Convenient to use on the stand or when held in the hand. Quiet in operation. No radio or television interference (motor was a.c. only).

Solis, Ru-Rita, Type 97 (Solis Mfg. Co., Zurich, Switzerland; Sears-Roebuck's Cat. No. 34-8320) \$8.95, plus postage. **1**

A good dryer. On and off positions were not marked on heater switch, however, and dryer lacked thermostat or other protection for heating element.

Description: 403 watts, 110 volts, ac-dc. Weight, 1 lb. 6 oz. (one of the lightest dryers tested). Plastic housing, no handle. Wire stand not adjustable. No switch for the fan, and on and off positions

of toggle switch for control of heating element were not marked.

Performance: Good water-removing ability and air flow. Good stability. Convenient to use either in the hand or resting on stand. The appliance was noisy in operation and produced objectionable radio and television interference. The fan was defective on one sample of two obtained for this test.

Dominion, Model 1803 (Dominion Electric Corp., Mansfield, Ohio) \$9.95. **2**

Quiet in operation, but only fair in performance. Lacked protective device for heating element.

Description: 315 watts, 110 volts, a.c. only. Weight, 2 lb. 6 oz. (one of the three heaviest dryers tested). Blue metal housing with attached blue plastic stand. Adjustable vertically but not horizontally. Three-position rotary switch, marked "off," "hot," "cold," for control of heating element and fan.

Performance: Fair water-removing ability and air flow. Good stability. Convenient to use with stand, but heavy and cumbersome to use in the hand. Quiet in operation. No radio or television interference.

Hamilton Beach Quick-Dry, No. 7 (Hamilton Beach Co., Div. Scovill Mfg. Co., Racine, Wis.) \$17.50. **3**

This dryer had an air-flow regulator. Stability of the appliance was only fair, but otherwise it was a good dryer.

Description: 315 watts, 115 volts, ac-dc. Weight, 1 lb. 15 oz. (about average). Ivory-painted metal housing. Metal stand, providing adjustment of the dryer vertically but not horizontally. Two toggle switches, one marked "on," one marked "hot"; the off and cool positions were not marked. A control marked *hot-warm* controlled air flow by means of an internal air-flow regulator slide. Had wire fuse (see text) to protect heating element against burnout.

Performance: Good water-removing ability and air flow (regulator open). Water removal was found



Handy Hannah



Oster Airjet



Knapp-Monarch

good even with regulator closed. Stability was only fair, and thus there was some inconvenience in use on the stand. Some heating of the handle was noted when the dryer was held in the hand. Noisy in operation. Noticeable radio and television interference.

Knapp-Monarch, Cat. No. 11-503 (Knapp Monarch Co., St. Louis) \$16.95. 3

Quiet in operation and convenient to use, but only fair in performance.

Description: 276 watts, 115 volts, 60 cycles, a.c. only. Weight, 2 lb. 4 oz. (one of three heaviest dryers tested). Chrome-plated metal housing with maroon plastic handle, gray plastic stand, on which the dryer was adjustable vertically but not horizontally. Three-position rotary switch marked "off, hot, cold" for control of heating element and fan. Had bimetallic thermostat to protect heating element (very desirable).

Performance: Water-removing ability and air flow, fair. Good stability. Quiet in operation. No radio or television interference.

Oster Airjet, Model 202 (John Oster Mfg. Co., Racine, Wis.) \$19.95. 3

A well-made dryer with good performance. Satisfactory with stand on table but cumbersome to hold because of attached base.

Description: 430 watts, 115 volts, ac-dc. Weight, 2 lb. 4 oz. (one of three heaviest dryers tested). Chrome-plated metal housing with attached black plastic base. Adjustable vertically but not horizontally. Two toggle switches, one for the fan marked "on-off," one for the heating element, marked "hot-cold." Had wire fuse to protect heating element.

Performance: Water-removing ability and air flow, good. Good stability. Convenient to use on the stand, but heavy and cumbersome when held in the hand. Noisy in operation. Noticeable radio and television interference.



Dominion



Hamilton Beach



Polar Cub

C. Not Recommended

Polar Cub, No. A77 (The A. C. Gilbert Co., New Haven, Conn.) \$7.95. 1

A quiet and convenient dryer, but relatively poor in performance.

Description: 232 watts, 110-120 volts, a.c. only. Weight, 1 lb. 13 oz. (about average). Gray metal housing with wood handle. Sheet metal stand, poorly finished on the bottom. Adjustable horizontally and, to a limited extent, vertically. No control for fan. One unmarked toggle switch for turning heating element on or off. Had bimetallic thermostat to protect heating element.

Performance: Poor water-removing ability and poor air flow. Convenient to use. Quiet in operation. No radio or television interference.

Handy Hannah, Cat. No. 995-C (Standard Products Corp., Whitman, Mass.) \$9.95. 2

Quiet in operation, but relatively poor in performance. Lacked protective device for heating element.

Description: 232 watts, 115 volts, a.c. only. Weight, 1 lb. 15 oz. (about average). Chrome-plated metal housing with wood handle. Sheet metal stand, poorly finished on the bottom. Adjustable horizontally and, to a limited extent, vertically. Two slide switches marked "on-off," "hot-cold." Air-flow regulator marked "increase heat—reduce heat."

Performance: Water-removing ability and air flow, poor. Good stability. Convenient to use. One of two quietest in operation. No radio or television interference. Slight shock hazard under humid conditions.

Gilbert, No. B-96 (The A. C. Gilbert Co.) \$15.95. 3

Attractive design but fair in performance. Had metallized finish which began to peel from the housing before the tests were completed. Had excessive vibration and showed slight shock hazard under humid conditions.

Description: 247 watts, 110-120 volts, ac-dc. Weight, 1 lb. 7 oz. (one of the lightest dryers tested). Maroon

and metallic gold colored plastic housing with metal base. Three-position rotary switch (at the end of handle) marked "off," "cold," "hot." Had fusible alloy protection (melting solder) intended to protect heating element.

Performance: Water-removing ability and air flow,

fair. Vibration was objected to as excessive, and made the dryer uncomfortable to hold in the hand and was sufficient to cause it to move in the stand. In test the thermal cut-out device did not protect the heating element which burned out. Noisy in operation. Objectionable radio and television interference. Slight shock hazard under humid conditions.

Scientists' and Businessmen's Ways of Thinking Important to Consumers

Dr. C. F. Rassweiler of Johns-Manville Corp., in speaking before the Manufacturing Chemists Association recently, commented upon the differences between the thinking habits of scientists and those of businessmen. "A scientific man," said Dr. Rassweiler, "thinks with great exactness . . . in terms of the exact physical laws of nature and experimentally determined facts." Differences of opinion are settled by further experimental checking of the facts under dispute, rather than by compromise. *In dealing with facts, a scientist cannot compromise.* "When two people differ about whether a cat is black or white, it is always safer to go and look at the cat again rather than compromise on the conclusion that the cat is gray."

Dr. Rassweiler's talk was reported briefly in Chemical and Engineering News for December 7, 1953. He made the point that the businessman, since he will often find that a delay in his decision is more serious than a certain amount of inaccuracy or uncertainty, is accustomed to reaching his decisions on the basis of opinions, judgments, and experience of human behavior with materials and money and may, therefore, often seek a compromise solution.

The businessman, accustomed of necessity to think in approximate and short-run terms, is likely to consider that the scientist, who must have a long-run approach to his problem, is visionary and unrealistic because he is unwilling to hazard his reputation as a scientist by giving a "curbstone opinion" or snap judgment on any and all matters referred to him. The businessman *must* depend upon generalized experience, judgment, often even intuition, in arriving at his decisions.

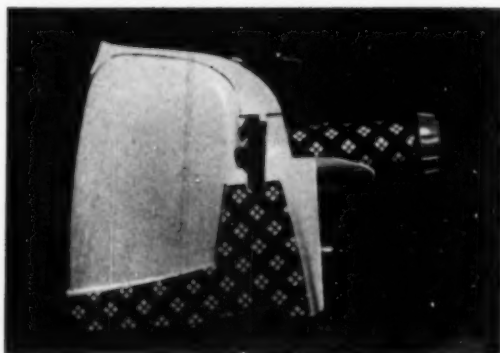
Corporations need businessmen who can think about technical matters in somewhat the same way as scientists and research men do, and likewise business needs research men who can have some appreciation of the problems of business enterprise and its managers, who must often make their decisions promptly on incomplete

information which has not been fully or exhaustively developed (and could not be, in the time available).

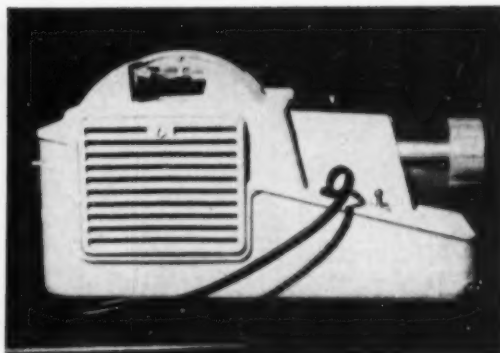
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A working solution of the effective use of scientists and engineers in business will be to the benefit of consumers as well as to business concerns, for the development of many of the complex appliances and other items used by consumers lags far behind the knowledge which qualified scientists and engineers are able to bring to bear on the problems involved.

Dr. Rassweiler's discussion did not mention politicians, but it is evident that Congress and the State Legislatures and their committees have a similar problem. Too often they try to settle a technical question, as, for example, whether the Bureau of Standards or some other scientific agency is doing its work competently, by the judgment of *politically interested* persons. Those seeking to determine the issue will, indeed, often have a financial stake in the decision to be reached; they cannot in any case wisely or soundly judge a technical or scientific issue, which is inherently beyond their type of knowledge and training, except as they may be advised by and will abide by the counsel of highly qualified professional persons trained in the exact sciences and accustomed to acting dispassionately and without special favor to private or group interests. Exactly this sort of problem arose in the controversy over a battery additive which nearly wrecked the operations of the Bureau of Standards, because national legislators and their staff were simply unaware of the technical complexity and importance of the problems with which they were dealing and had no idea of how they might be handled in a strictly rational fashion, in the public interest rather than to serve the private interests of a manufacturer or promoter or of politicians who had sought to bring influence to bear on the scientific work of a government agency.



Skot



Revere Model 444

Viewers and Projectors for Color Slides

UNQUESTIONABLY the best way to view color slides is by projection to near life size or larger on a screen where the pictures can be seen by a large number of people at the same time. Setting up the equipment (projector and screen), rearranging some of the furniture, etc., tends to be a bother in many homes. Of course, in a home where a good deal of viewing of slides is done, this is not a problem, as the setup may be permanently ready for use in a game room or other convenient space. (Even then, however, a hand viewer may have its place for classification, sorting, or indexing of slides.)

Some consumers find it convenient to view color slides by means of an inexpensive hand or table viewer. This permits one person (or in a few cases, two) to look at the slide at a time. If more than one or two people are interested, a projector will be set up and used, if available. The lower-priced hand or table viewers sell at prices ranging from \$1 to about \$10 as compared with about \$35 up to \$90 or more for a satisfactory projector. The simplest kind of hand viewers consists of a small box with a lens at one end and a slot near the other to hold a color slide in front of a small diffusing screen. Usually the lens has a magnification of about 4 or 5 times, though some do give magnifications as high as 7x. This type is usually satisfactory enough where only a very few slides are to be viewed, but its use is rather tiring if there is a considerable

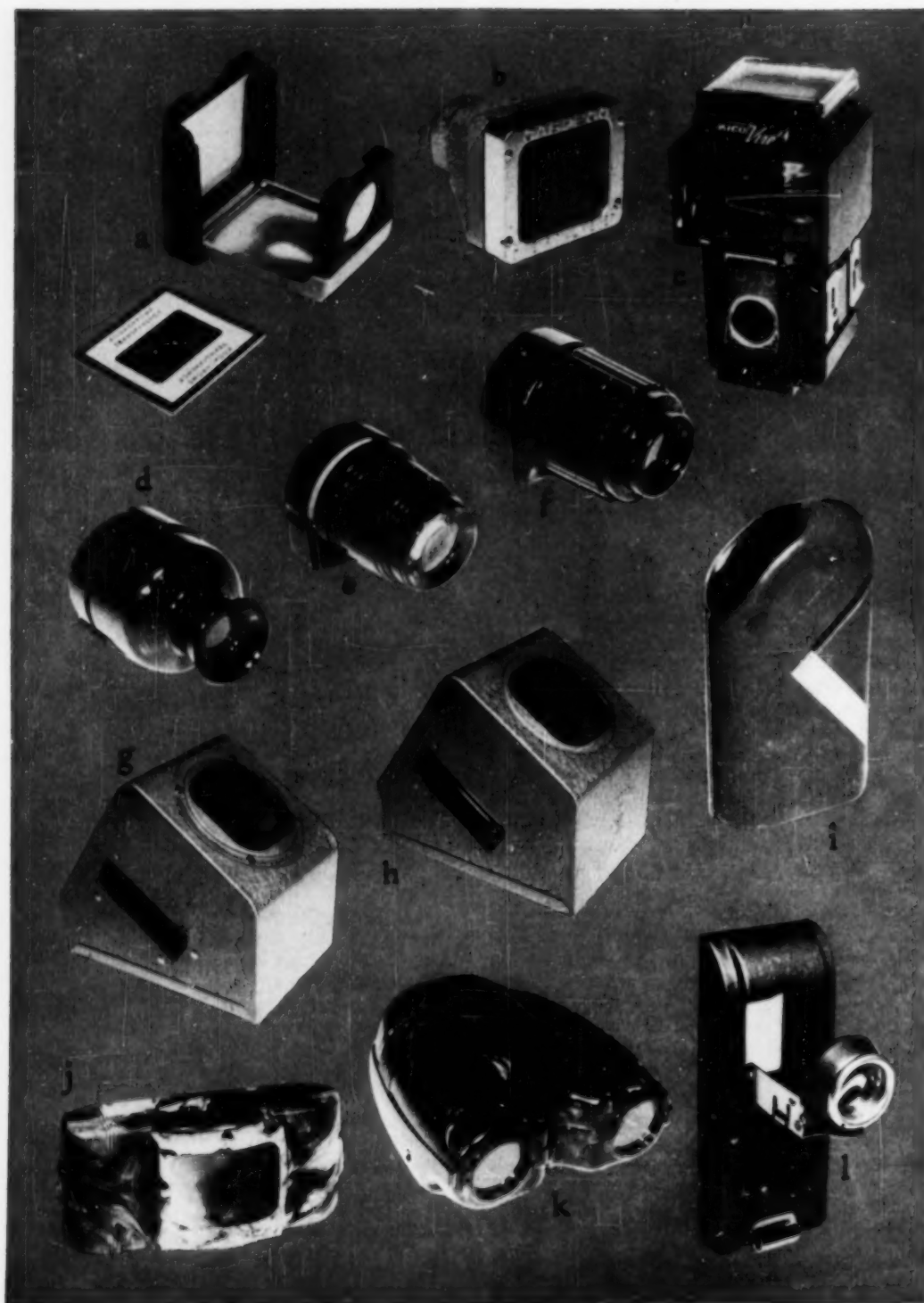
number of slides, as only one eye is used.

The claim offered by some makers that their device gives a third-dimensional effect should be discounted very heavily, since this effect is no greater than when any picture or transparency is viewed through a magnifying lens, and bears no comparison with true *stereo* viewing, for which two similar but not identical pictures are required, and two magnifying lenses. (The two separate pictures differ in the viewpoint from which they were taken and it is this difference that gives the 3-dimensional effect.)

There are binocular viewers, which have a lens for each eye, and these overcome one of the chief objections to the cheapest hand viewers. So far as CR knows, there is only one viewer of this kind on the market at the present time, and this was not considered good enough to warrant recommendation (see listing).

Still a third kind of viewer permits both eyes to be used, in that the viewer contains a large lens, say $2\frac{1}{2} \times 1\frac{1}{2}$ or $2\frac{1}{2} \times 2\frac{1}{2}$ in size. This is not held against the eye, but at a viewing distance of about 10 inches. This kind of viewer commonly has a built-in lamp for illumination; some makes have provision for storing slides.

There are a few table viewers sold of a more elaborate type which are actually projectors, but instead of using a large screen, project the slide onto a suitable ground glass at a magnification of about 4x. These, which range in price from \$37.50 to \$100 or more, are not included



in this article except in very abbreviated form in the listings of projectors at the end of this article. (See CONSUMERS' RESEARCH BULLETINS, January and October 1952, for fuller reports on Kodaslide 4X and TDC Project-Or-View.

Slide viewers

The following viewers are to be held in the hand toward a window or light for viewing with one eye. The focusing type gives sharper images for the average user, and is to be preferred to the non-focusing type, which would give sharp images for some but not for others, depending upon the visual corrections of the persons concerned. Before purchasing a non-focusing viewer, be sure that it gives a sharp image, for your eyes. It is necessary to check, too, that the edges or corners of the picture are not cut off when glasses are worn, if you will wear glasses when using the viewer. If you wear glasses, the focusing type of viewer will usually be a necessity.

B. Intermediate

Guild Mini-Master (Craftsmen's Guild, Hollywood)

\$1. A small all plastic fixed-focus viewer. Lucite lens, about $f/2$, magnification approximately 5x. Approximate size, $2\frac{1}{4} \times 2\frac{1}{4} \times 3$ in. The viewer had three 2×2 in. cardboard mounts which provided a means to feed and view 8 mm., 16 mm., and 35 mm. film strips.

Guild "35" (Craftsmen's Guild) \$3.50. A small all-plastic, adjustable-focus double-lens viewer. Lens, about $f/1.3$. Magnification, about 7x. Approximate size, $2\frac{1}{4} \times 2\frac{1}{4} \times 3$ in. The viewer had three cardboard mounts which provided a means to feed and view 8 mm., 16 mm., and 35 mm. strip film.

Kodaslide Pocket Viewer (Eastman Kodak Co., Rochester, N. Y.) \$1.95. A small well-constructed plastic folding fixed-focus viewer. Lens, about $f/2.5$.

Identification of Viewers

- a—Kodaslide Pocket Viewer
- b—Caspeco Dimensional Viewer
- c—Mico Vue
- d—Ultra-Vue
- e—Guild Mini-Master
- f—Guild "35"
- g—Logan Magna-View No. 210
- h—Brumberger No. 1225
- i—Admiral
- j—Arrow-View
- k—Twinklens
- l—Pak

Magnification, about 4x. Approximate size, closed, $2\frac{3}{4} \times 2\frac{1}{4} \times \frac{3}{4}$ in. This is a specially convenient device on account of its folding into small compass when not in use.

Pak (LaBelle Industries, Oconomowoc, Wis.) \$4.95.

The lens, which can be focused, collapses into the case when not in use. From 1 to 10 cardboard-mounted slides are placed in the bottom of the viewer. Pulling the slide carrier out removes the slide after it has been viewed and returns it to the slide chamber; pushing the slide carrier in moves the next slide to viewing position in front of the ground-glass diffusing screen. The body is of metal; approximate size closed, $2\frac{1}{8} \times 5\frac{1}{4} \times 1$ in. The slide changer, which seemed to be of durable construction, was somewhat hard to operate; otherwise the viewer functioned well. The slide carrier must be pulled all the way out before pushing in; otherwise two slides may be fed in and jamming would occur. Lens, about $f/2.9$. Magnification, about 4x. Will not take glass-mounted slides.

C. Not Recommended

Caspeco Dimensional Viewer (Camera Specialty

Co., Bronxville 8, N. Y.) \$2.95. A small cast-aluminum or aluminum-alloy fixed-focus viewer. Lens quality, poor. Lens, about $f/2.8$. Magnification, about 5x. Apparently not intended to be taken apart for cleaning—which would be necessary—as four threaded drive pins which held end in place had no screwdriver slots to facilitate removal. Approximate size, $2\frac{1}{2} \times 2\frac{1}{8} \times 2\frac{1}{2}$ in.

Ultra-Vue (The Chromat-O-Scope Co., 426 S. Spring St., Los Angeles) \$1.95. A small plastic adjustable-focus viewer. Lens, $f/2.8$. Magnification, about 5x. Approximate size, $3 \times 2\frac{1}{4}$ in. in diameter. Does not cover full slide (corners are cut off). Difficult to clean.

* * *

The following is of the same class as the foregoing, but is a binocular-type viewer with which both eyes are used.

C. Not Recommended

Twinklens (Craftsmen's Guild) \$9.75. The body was made of rather thin plastic. This viewer contained a system of mirrors arranged to permit the two images to be seen as one. The distance between the two lenses, $2\frac{1}{2}$ in. (interpupillary distance), was not adjustable, which is a disadvantage. Lens, $f/4.5$. Magnification, about 2x. As received, the device operated satisfactorily and was considered superior to the single-lens viewers with which only one eye is used. When taken apart, which was necessary for cleaning, it was found to be very difficult to reassemble with the mirrors in correct alignment; the device would be useless if this were not done correctly. The viewer bore a tag stating "if any defect appears at any time, viewer will be repaired or replaced immediately without charge."

Removing the cover for cleaning and being unable to reassemble with the mirrors correctly aligned would evidently not be covered under the above guarantee which elsewhere is explained as applying only to defects in materials and workmanship. In any event, having to return the viewer to the manufacturer for correct assembly when it was cleaned would, in CR's opinion, make the device an unsatisfactory choice for most users.

• • •

The following five viewers are of a design which permits viewing with both eyes at a normal viewing distance of about 10 inches. They do not have as great a magnification as the viewers using only one eye; the magnification, however, is considered sufficient for most purposes. They usually have built-in illumination. Some must be held in the hand; others which connect to the 110-volt power supply are table models.

A. Recommended

Arrow-View (Arrow Metal Products, 128 N. Jefferson

St., Chicago) \$5.95. The slides are placed one at a time into a slot at the top of the viewer. Illumination is by a flashlight bulb in a white reflector covered by a ground-glass diffusion screen. Uses two size C flashlight batteries. Holding the slide down makes electrical contact to light the lamp, and the slide is viewed through a clear $1\frac{3}{4} \times 1\frac{3}{4}$ in. viewing lens. The lens is focused by means of a knob. Magnification, about 1.3x. The body is of marbelized gray plastic. Approximate size closed, 5 wide x $2\frac{1}{2}$ high x $1\frac{3}{4}$ in. deep. Easy to operate and easy to take apart for cleaning parts or replacing batteries.

Brumberger, No. 1225 (Brumberger Sales Corp.,

Brooklyn 32, N. Y.) \$6.50. Metal table viewer with 110-volt lamp. Clear viewing lens, $2\frac{1}{2}$ in. square. Magnification, about 1.3x. Handles all slides from 35 mm. (2 x 2 mounts) to $2\frac{1}{4} \times 2\frac{1}{4}$ in. ($2\frac{3}{4} \times 2\frac{3}{4}$ mounts). Uses 7-watt 110-volt bulb in white reflector behind a plastic diffusing screen. On-off switch. Metal body; approximate size, 4 x $5\frac{1}{2}$ x 6 in. The base is removable for replacing the lamp, but the back of the viewing lens is somewhat difficult to clean (the lens, held in place by bent metal tabs, is not intended to be removed and replaced).

Logan Magna-View, No. 210 (Logan Electric Spec.

Mfg. Co., Chicago 22) \$6.50. Essentially the same as *Brumberger No. 1225* and may have been made by the same manufacturer. The *Logan* had the advantage over the *Brumberger* that the viewing lens could be taken out for cleaning by removal of four self-tapping screws.

Mico Vue (Mico Photo Products Co., 119 S. Dearborn

St., Chicago 3) \$5.95. Battery light attachment, \$1.95. Slides are placed in a slot at top of the viewer beneath a plastic diffusion screen and pro-

jected through a 45° mirror to a viewing lens, $2\frac{1}{2} \times 1\frac{3}{4}$ in. Approximate magnification, 1.4x. A small ($\frac{3}{4}$ -in. diameter) built-in magnifier is available for inspection of fine details of the pictures. Pictures are removed, one at a time, from the bottom of the chamber, viewed, then replaced at the top of the chamber. The slide chamber stores 36 transparencies in mounts in sequence (13 in glass mounts), with means to prevent the slides from falling out when the viewer is not in use. The body is of brown plastic; approximate size, $5\frac{1}{4} \times 2\frac{1}{2} \times 2\frac{3}{4}$ in. Easy to operate.

B. Intermediate

Admiral (Admiral Photo Products Co., 1010 W.

Lake St., Chicago) \$4.95. The slides are placed one at a time in a slot near the top of the viewer. Illumination is by a flashlight bulb in a white reflector covered by an opal glass diffusion screen. Uses two size D flashlight batteries. Holding the slide down makes electrical contact, and the slide is viewed through an oval-shaped fixed-focus viewing lens $2\frac{1}{8} \times 1\frac{1}{4}$ in. Approximate magnification, about 1.3x. There was some cutting off of corners of pictures when the viewer was held at normal distance. The body is of molded plastic, reinforced with *Fiberglas*. Easy to operate and to take apart for cleaning or replacement of batteries.

Slide projectors

Most slide projectors are equipped with *f*/3.5 lenses of 5-inch focal length, which means that the approximate sizes of the projected pictures will be 16 x 24 inches with the projector 8 feet away from the screen, 20 x 30 inches at 10 feet, 24 x 36 inches at 12 feet, 31 x 46 inches at 15 feet, and 41 x 62 inches at 20 feet. As transparencies are not all taken with the longest dimension horizontal, a square screen, 40 x 40 inches, 50 x 50 inches, or larger, is to be preferred to a rectangular screen (30 x 40 inches, 37 x 50 inches, etc.) if it is desired to obtain the largest picture possible from both kinds of slides without having to move the projector.

It should be noted that there is little advantage obtained by paying extra for a fast projection lens (*f*/2.9 is offered in some makes) unless the condenser system fills the lens pupil with light. The *Skyline DeLuxe*, for example, with an *f*/2.9 lens actually gave less light on the screen than some 300-watt projectors with slower, less expensive *f*/3.5 lenses that had been previously tested by CR.

For 2 x 2 inch slides

A. Recommended

Skot (American Optical Co., Chelsea 50, Mass.)

\$49.95, including carrying case. Coated *f*/3.5 5-in.

lens. Focusing by movement of lens in helical mount. Equipped with 300-watt lamp, double condenser, heat-absorbing glass, and fan. The slide carrier is not removable; when in "loading" position (carrier pulled back to insert next slide), the light is cut off. Each slide is pushed out of the projector by the next one; the last slide must be removed by using a blank slide to push it out. The light output and evenness of illumination were good. Resolving power of the lens was good. The carrier worked well with the cardboard-mounted slides and aluminum-mounted slides, but slides bound between glass with tape tended to stick. Temperature of slide, 119°F (very satisfactory). Plaid color scheme is on the gaudy side and may be objectionable to some; however, projector is now also available in plain colors.

S. V. E. Skyline, Model A (Society for Visual Education, Inc., Chicago 14) \$42. This has been discontinued, but is now being sold in some stores at greatly reduced prices, around \$20 to \$22.50. Coated $f/4$ lens which has a 5-in. focal length. Focusing by movement of entire lens in helical mount. Equipped with 200-watt lamp, convection cooled (no fan). The light output was good, and evenness of illumination very good. Resolving power of the lens, good. Temperature of slide, 175° (somewhat high).

B. Intermediate

LaBelle, Model 55 (LaBelle Industries, Inc., Oconomowoc, Wis.) \$95. Coated $f/3.5$ Wollensak Series O Projection lens of 5-in. focal length. Focusing by movement of entire lens mount by rubber friction roller drive. Equipped with 500-watt lamp, triple condenser, heat-absorbing glass, and cooling fan. Magazine feed, which operated satisfactorily. Fan operates whenever cord is plugged in; the lamp is then turned on by a switch on the projector body, a desirable arrangement. Light output was good, and evenness of illumination poor (lower corners

were dark). Resolving power of lens, good. Temperature of slide, 154° (satisfactory). With more even illumination, this projector would warrant an A rating.

Revere, Model 444 (Revere Camera Co., 320 E. 21 St., Chicago 16) \$69.50. Lens, 5-in. coated $f/3.5$ Wollensak Projection Anastigmat. Focused by rotation of lens in spiral mount. Equipped with 300-watt lamp, double condenser, heat-absorbing glass, and fan. Slide carrier was of the drum type, and holds 4 slides at a time. Each slide is inserted in horizontal position and is held in place by a spring-actuated device. Light shining through a piece of opal glass from the bulb permits the operator to inspect the slide before projecting it. Shutter behind the lens closes as slides are changed. Light output, good; evenness of illumination, poor; all corners were relatively dark (corner to center ratio, 50%). Temperature of slide, 166° (satisfactory). Resolving power of the lens was satisfactory. This projector is mechanically well designed, and with more even illumination would have warranted an A rating.

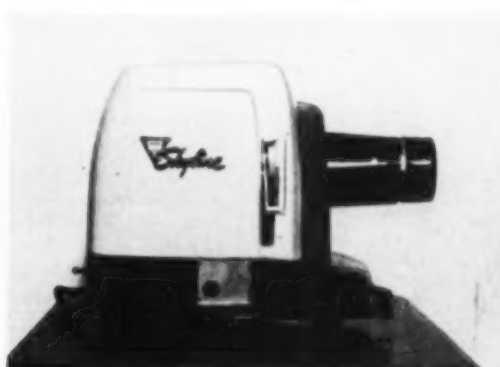
C. Not Recommended

S. V. E. Skyline, Model 200B (Society for Visual Education, Inc.) \$39.95; cases, \$7.95 and \$12.50. Lens, 5-in. coated (aperture not marked, but this was judged about $f/3.5$). Equipped with 200-watt lamp, double condenser, and fan. Quality of lens, poor; considerable curvature of field and astigmatism. Light output, about average. Evenness of illumination, below average. Temperature of slide, 114° (very satisfactory). Note: This is not to be confused with the Skyline Model B which it replaces. (The Model B was A. Recommended.)

S.V.E. Skyline DeLuxe (Society for Visual Education, Inc.) \$59.75; cases, \$7.95 and \$12.50. Lens, 5-in. coated $f/2.9$, which was focused by rotation of lens in spiral mount. Equipped with 300-watt



LaBelle Model 55



S.V.E. Skyline DeLuxe

lamp, double condenser, and fan. Had small light in base to permit identification of slides before showing. Light output, about average for 300-watt projectors. Evenness of illumination, good. Temperature of slide, 133° (very satisfactory). Resolving power of lens, fair; some color fringing.

* * *

For the benefit of those subscribers who do not have copies of previous BULLETINS at hand, greatly condensed listings of projectors and projector-viewer combinations previously reported are given below.

For 2 x 2 inch slides

A. Recommended

MC 300 (American Optical Co., Chelsea 50, Mass.)

\$92; carrying case, \$7.50. Coated $f/3.75$ lens. 300-watt lamp. Quiet, vibrationless fan gave adequate cooling. Lens performance, good.

Performer (American Optical Co.) \$87, including case. Lens, 5-in. coated triplet, $f/3.5$. 500-watt lamp. Blower for cooling. Resolving power of lens, very good. Light output, good. Temperature of slide (178°), somewhat high.

B. Intermediate

Kodaslide Highlux II (Eastman Kodak Co., Rochester, N. Y.) \$36; case, \$7.50. Coated Kodak Projection Ektanon $f/3.5$ lens. Double (coated) condenser, heat-absorbing glass. 200-watt lamp. Lens quality, fair.

Kodaslide Highlux III (Eastman) \$55, including case which contains the fan. Coated Kodak Projection Ektanon $f/3.5$ lens. Double (coated) condenser, heat-absorbing glass, ventilating fan. Adequate cooling. 300-watt lamp. Lens quality, fair.



S.V.E. Skyline Model 200B

TDC Project-Or-View (Three Dimension Co., Chicago 41) \$75, with coated objective lens of (approx.) 3-in. focal length. A combination viewer and projector which permits projecting pictures either on the usual screen at about 6 to 12 ft. distance or on a ground glass which is built into the opposite side of the projector-viewer. 200-watt lamp and fan; adequate cooling. Lens quality, average; lens somewhat difficult to clean. Light output and evenness of illumination, fair.

TDC Vivid Mainliner 300 (Three Dimension Co.) \$57, with $f/3.5$ coated 5-in. objective lens. 300-watt lamp and fan. Evenness of illumination, fair, but performance of the lens was somewhat better than average.

TDC Vivid Streamliner 500 (Three Dimension Co.) \$75, with $f/3.5$ coated 5-in. objective lens and semi-automatic slide changer. 500-watt lamp and fan. Evenness of illumination, fair. Lens performance, satisfactory.

Viewlex, Model V-33 (Viewlex, Inc., Long Island City, N. Y.) \$62; case, \$16; automatic slide changer, \$15. Coated $f/3.5$ lens. 300-watt lamp. Fan rather noisy, but provided satisfactory cooling. Lens performance, fair.

C. Not Recommended

Baby Zett; Kodaslide Master; Kodaslide Merit; S. V. E. Skyline 300-B; Tower; Vu-Aid.

For 2-3/4 x 2-3/4 inch slides (picture size 2-1/4 x 2-1/4 inch or smaller)

A. Recommended

Reviewer (American Optical Co.) \$110, with 7-in. lens; case, \$9.50. Slide carrier for 2 x 2 in. slides, and adapter, \$4.60. 500-watt lamp, triple condenser, heat-absorbing glass, quiet fan. Lens performance, good. Believed the best buy in a projector taking 2 3/4 x 2 3/4 in. slides. With 5-in. lens, rating would be *B. Intermediate*, because evenness of illumination was poor.

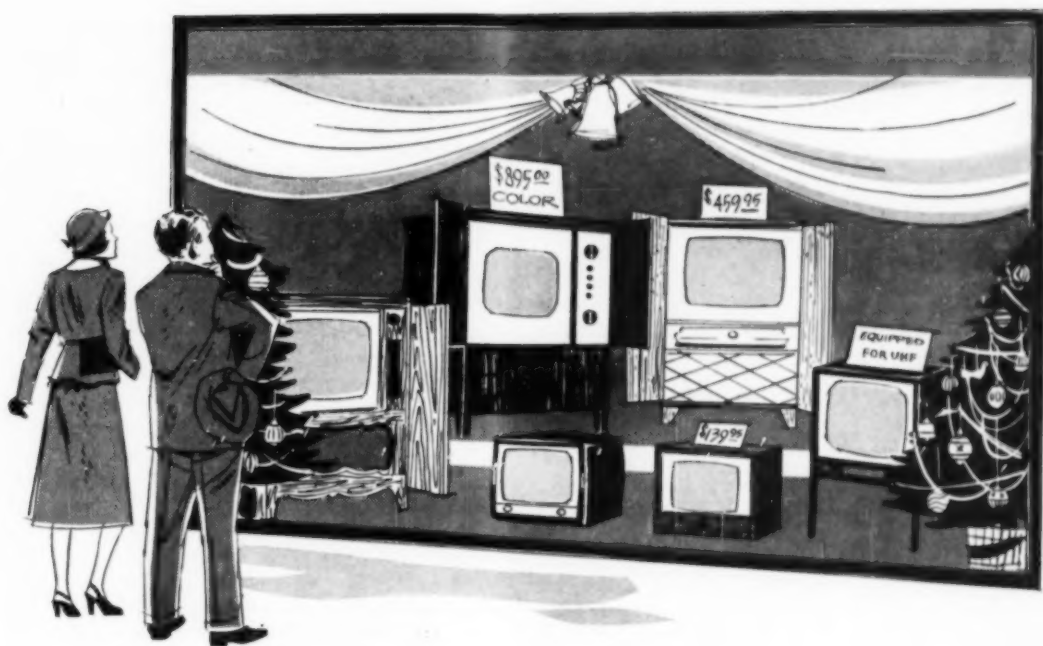
B. Intermediate

GoldE Reflex (GoldE Mfg. Co., Chicago 40) \$84, with $f/4$ lens, and case. 300-watt lamp. Fan gave adequate cooling, but was noisy. Projects 2 x 2 in. slides also.

TDC Streamliner 500 Duo (Three Dimension Co.) \$74, with $f/3.5$ lens. With 500-watt lamp, triple condenser, heat-absorbing glass, and fan; cooling, adequate. Resolution of lens, good. Evenness of illumination, poor. Slide carriers provided for 2 3/4 x 2 3/4 in. and 2 x 2 in. slides.

C. Not Recommended

Fleetwood, No. 1405; TDC Streamliner 300 Duo.



1955 TV Receivers

IN KEEPING with general public demand, most manufacturers appear to concentrate their main production and sales efforts on receivers in the under-\$200 class. Many models are available at less than last year's prices. Table-model 17-inch sets are in the \$130 to \$180 range; 21-inch receivers in the \$150 to \$200 range. At the same time, prices on the more expensive console models have this fall been advanced, in several cases. Thus the relatively inexpensive table models represent the best buys in TV receivers at this time.

CR has for several years commented on the poor quality of the sound output of most TV receivers, with the hope that manufacturers would see fit to improve it to an extent sufficient to justify the potentialities of the FM transmission quality emitted by the broadcasting station. Some manufacturers, Magnavox and Zenith, for example, have evidently attempted to make improvements in this respect, for they are now offering some receivers that incorporate push-pull audio output circuits and speaker systems capable of reasonably good fidelity. On the other hand, certain manufacturers—and there are a good many of these—have gone in the opposite direction, and have decided to “cut corners” in the audio sections of their

1955 “competitive” models in order to reduce costs of making their receivers. They are using an output transformer (the size of which is reflected pretty directly in the quality of the sound and its frequency range) of shockingly small size—which can only mean poor, limited, distorted sound. In some instances certain circuit components have been chosen by the manufacturers so as to cut off the frequency response at about 3000 cycles per second, a cut-off point which does bad things to good music and which would be considered a low upper limit even for a cheap table-model radio.

Most of the other changes to be noted in the 1955 models consist merely of various refinements which have been introduced to bring down price, while at the same time maintaining good performance. Several new tubes developed mainly for TV receivers are employed, and practically all of the major manufacturers are now using 41.25 to 45.75 megacycles for the intermediate frequency section as suggested by the Federal Communications Commission. There is a noticeable trend toward the use of the vertical chassis (see *Crosley Super-V* in June 1954 BULLETIN) with improved ease of servicing a defective set. Most manufacturers are also using the new aluminized 21-inch picture tube

with 90° beam deflection, in part of their line. This new shorter tube gives a larger, brighter picture (about 265 square inches of viewing area as compared to the usual 250 square inches in most 21-inch tubes), and also allows use of a cabinet of less depth from front to back. Receiver sensitivity, a factor important to users in fringe areas, remains about the same as last year, on the average.

At least one manufacturer, Admiral, is utilizing printed circuit sections as part of the chassis. This should result in less need for servicing but may make servicing somewhat more difficult and costly when trouble develops. The change does help, however, to reduce the size and weight of the receiver.

Color TV

Color television still remains in what might be called the infant stage. Westinghouse, who were the first to market a compatible color receiver, found very few interested enough to buy, and a similar experience was shared by RCA, Emerson, and Motorola. As a result, only a small number of the estimated total of less than 9000 color sets manufactured by mid-1954 were sold, and the early 1954 receivers are already considered obsolete. High price (\$1000 or more) and small picture size (under 100 square inches) as well as very limited time of color broadcasting were likely the principal deterrent factors that kept the consumers from buying.

Color picture tubes with a viewing area comparable to the usual 19-inch black-and-white tube are now being manufactured on a mass-production basis, and a few manufacturers are marketing color receivers with these larger 205 square inch screens. Prices of the sets are still high—in the \$800 to \$1000 or more range—and will likely remain so until production is at a high enough rate to allow a price reduction based on mass-production economies. The color picture tube, itself, is being sold to the set manufacturers at \$175, and, in addition, a color receiver requires far more complex circuit arrangements than a black-and-white receiver. Motorola, for example, are using a 16-tube chassis in their black-and-white receivers and a 29-tube chassis in their 19-inch color receiver. (The 12-inch CBS color receiver uses 44 tubes.)

There can be little doubt that color TV will grow tremendously within the next few years. While estimates vary, it is generally conceded that only about 25,000 color receivers will be sold in 1954. The following timetable of possible future growth is based upon the estimate of an

executive of one of the largest TV receiver manufacturers:

Year	No. of Receivers Produced	Average Price
1955	350,000	\$750
1956	1,700,000	\$450
1957	3,000,000	\$315
1958	5,000,000	?

It was CR's intention to test and report on several color receivers in this article. Because only two brands were being sold and in such small quantity, it was decided to postpone the tests till a time when the results would be of somewhat lasting rather than transient or fleeting value. This decision was further based on the fact that only about 100 total hours of programs in color are scheduled for 1954 by the two major networks, and only about 50 percent of the more than 200 major TV cities will be connected with cable capable of handling the color TV signal by the end of the year.

The color receivers which CR's engineers have examined and viewed have given a very good account of themselves, considering the newness of the medium. Excluding difficulties originating at the broadcast studio, pictures generally have shown good color rendition, and the receivers have not been difficult to tune or adjust and have been reliable in operation. Service, however, may be expected to be expensive. Motorola's one-year service contract costs \$150, and a trade paper has indicated that because of the complexity of the circuits, color receivers will require twice as much servicing and that service will cost about twice as much for each call as compared to present black-and-white receivers (thus implying a 4 to 1 factor in annual cost of servicing color sets as compared with black and white).

At the present time, the picture quality of color transmissions as received in black and white on black-and-white receivers has not been too satisfactory; a fuzziness or lack of clear definition is apparent, and the picture is oftentimes lacking in contrast. The standards for transmission of color theoretically provide for high-quality black-and-white reception, and it is hoped that the broadcasters will soon develop the necessary studio techniques for color-casting so that present owners of receivers meant for black and white alone will not be driven to purchase new color receivers merely so that they may be able to attain satisfactory picture clarity during color broadcasts. Continued unconscious effort of the eyes to focus on an unsharp picture can be very trying over a period of time.

The UHF problem

There has been much discussion during the past year regarding the apparent plight of many of the UHF (Ultra High Frequency) stations.¹ A consensus of opinions expressed at hearings in Washington on the problem in the past few months indicated a need for and were likely instrumental in bringing about certain changes in the F.C.C. rules governing station ownership and operation. It is hoped these changes will strengthen the relatively weak position of many UHF stations.

In those areas in which there are no VHF stations competing with UHF stations, viewers have no choice but to purchase a receiver capable of UHF reception. Where both types of transmission are available, there is usually little need to spend the additional amount needed to equip for UHF reception, unless, of course, some particular programs desired are available only on UHF channels. There are now more than 400 TV stations on the air, of which about 30 percent are on the UHF band. The number of UHF stations which have ceased operation—usually by reason of insufficient advertising income—however, is high, and unless you are in an exclusive UHF area or your local UHF stations have advantageous network affiliations not available on VHF, you would likely be wise to defer purchase of a set equipped for UHF reception.

Choosing a 1955 model

Probably the greatest single factor influencing the choice of a black-and-white receiver at this time is the availability of color receivers. It would seem unwise—for the purchaser who wishes to keep the cost low—to invest a relatively large sum (\$300 to \$500) at this time for a top-grade console model in an expensive cabinet, since comparable picture quality can be had in much less expensive models in the under-\$220 price range. By 1957, your 1955 model \$400 console may be worth little more than \$50, when you decide to turn it in on a \$350 color receiver. If your present receiver is operating satisfactorily, but because of age may be expected to need additional servicing during the next two or three years, you would likely still be wise to keep it and be prepared to meet the added service costs. A new picture tube

represents the maximum charge likely to be incurred, and its cost will vary from about \$38 for a 17-inch tube to \$55 for a 21-inch. Rebuilt tubes, which are somewhat less expensive, are available. These may vary considerably in quality, and unless covered fully by a one-year guarantee are likely not to represent a safe purchase.

If you have watched a color program on a color receiver and have decided you will not want a color receiver, even when the price has come down so that you can afford it, you may buy a black-and-white receiver without hesitation or restriction as to price. It is CR's belief, however, that color receivers will be in almost universal demand when a good many hours a week of color programs are available and when the receivers are priced around \$300, and service costs reduced correspondingly, as we hope may occur. There is no doubt that the great majority of set owners will prefer a color picture to one in black and white, when the element of price and cost of maintenance does not determine their choice.

Before purchasing any one of the receivers listed, decide on the size of the picture you need. Depending on one's seeing ability, a 17-inch receiver may be preferable to a 21-inch if the viewing room is small, say under 15 feet in its greatest dimension. You should attentively check and compare the operation of the set in the dealer's show room. Allow, however, for the fact that you may be deceived in the performance of a particular set through a dealer's having adjusted one on which he makes a higher profit so as to make another receiver which he sells appear at a disadvantage. Preferably you should not buy until you have tried the set in your home, if possible, and made certain that it functions satisfactorily there.

In the following listings, all receivers except the *Admiral*, *Emerson*, and *Zenith* were listed as acceptable to the Underwriters' Laboratories and carried the UL label. CR did not find any receiver which exhibited an excessive shock hazard on screws, shafts, shields, etc., which might be touched at the exterior of the cabinet. The radio frequency radiation emitted by each receiver was measured at the antenna, the power line, and chassis. This type of radiation is undesirable since it may interfere with a neighbor's TV set or other types of communication equipment near by. Measurements were also made to determine the capabilities of each receiver to reject external interference at the intermediate frequency, the adjacent channel frequency, and at random frequencies (electrical noise) as produced by a motor-

¹VHF (Very High Frequency) refers to those bands of frequencies (54 to 88 and 174 to 216 megacycles) which have been used for TV broadcasting for several years. Channels 2 to 13 inclusive are within those bands. UHF refers to that portion of the broadcast frequency spectrum located between 470 and 890 megacycles. Channels 14 to 83 inclusive are located within the UHF band.

operated appliance such as a vacuum cleaner or food mixer. Although wide voltage variations in the line are not common in many areas, they may at times be troublesome. In the reduced-line-voltage test, each receiver was operated at 100 and then at 90 volts. (Line voltage normally varies between 115 and 120 volts.)

A. Recommended

Admiral, Model C2256N (Admiral Corp., Chicago) \$199.95.

A receiver giving generally good all-around performance. Not outstanding, but should serve very satisfactorily.

A console model with 17 tubes, 2 rectifiers, and 21-in. picture tube. Mask size, 17 in. wide x 13½ in. high. Cabinet constructed of light wood. Estimated monthly operating cost, 85c. Presented a steady, clear picture of ample brightness. Sensitivity was good, and adequate for most fringe-area locations. Ability to reject external interference, good. Potential interfering radiation produced by the receiver, low (desirable). "Snow" in picture (called "noise" by communications engineers), desirably low. Operated quite satisfactorily at reduced line voltage. Quality of sound output from 8-in. speaker, satisfactory. Estimated acoustical range, 75 to 6000 c.p.s. (good as compared with other TV receivers tested). ¶Chassis 20X5AHM4 was used in receiver tested and is also used in several other models in the under-\$300 price range. **1**

CBS Columbia, Model 22C05 (Division of CBS Systems Inc., 3400 47 Ave., Long Island City, N.Y.) \$199.95.

Generally above average in most respects except for the quality of the sound output, which was about average. A console model with 18 tubes, 2 rectifiers, and a 21-in. picture tube. Picture mask size, 18 in. wide x 13 in. high. Cabinet constructed of light wood covered with simulated leather. Estimated monthly operating cost, \$1.10. Presented a steady, clear picture having ample brightness. Sensitivity was good and adequate for reception in the remote (fringe) areas. Ability to reject external interference, good. Potential interference radiated by the receiver, low (desirable). "Snow" in picture, low. Operated satisfactorily at reduced line voltage. Quality of sound output from 5-in. speaker, judged average; some noise present in output. Estimated acoustical range, 125 to 6000 c.p.s., average. ¶Console Model 22C09 uses the same chassis. **1**

Philco, Model 22C4119 (Philco Corp., Philadelphia) \$239.95.

Overall, a good performing receiver, but with only average audio quality.

A console model with 14 tubes, 2 rectifiers, and a 21-in. picture tube. Picture mask size, 17¼ in. wide x 13½ in. high. Cabinet well constructed of wood and "hardboard." Estimated monthly operating cost, 75c. Picture quality and stability, above average, and sensitivity adequate for reception in most fringe areas. "Snow" in picture, low. Radiation from receiver, desirably low. Ability to reject external interference, good (desirable). Operated very satisfactorily at reduced line voltage. Quality of sound output from 6-in. speaker, satisfactory. Estimated acoustical range, 100 to 6000 c.p.s. **2**

R.C.A. Victor, Model 21S-502 (Radio Corp. of America, Camden, N.J.) \$209.95.

Above average in most respects and a definite improvement over RCA's comparable 1954 model.

A table model with 16 tubes, 2 rectifiers, and a 21-in. picture tube. Picture mask size, 19 in. wide x 13¾ in. high. Sheet-metal cabinet with maroon finish. Estimated monthly operating cost, 80c. The picture was clear and steady. Sensitivity was adequate for reception in most fringe areas. "Snow" in picture, low. Radiation from receiver, desirably low. Ability to reject external interference, good. Operation at reduced line voltage, only fair. Quality of sound output from 5-in. speaker, satisfactory. Estimated acoustical response, 125 to 5000 c.p.s. with low distortion. ¶Other RCA receivers of the "S" series use the same chassis. **2**

Zenith, Model R2229R (Zenith Radio Corp., Chicago) \$209.95.

Generally above average in most respects except quality of sound output.

A table model with 16 tubes, 2 rectifiers, and a 21-in. picture tube. Picture mask size, 19½ in. wide x 14 in. high; actual picture seen on screen is somewhat smaller. Cabinet of sheet-metal construction. Estimated monthly operating cost, 85c. Presented a steady, clear picture having very good brightness. Sensitivity was good, and ample for fringe-area reception. Ability to reject external interference, good. Potential interference radiated by receiver, low (desirable). "Snow" in picture, desirably low. Operated very satisfactorily at reduced line voltage. Quality of sound output from 5-in. speaker, satisfactory. Estimated acoustical range, 125 to 4000 c.p.s.—below average. ¶Zenith chassis 19R21 used in receiver tested is similar to chassis 19R20, 19R20U, and 19R21U. **2**

DuMont Winsted (Allen B. DuMont Laboratories, Clifton, N.J.) \$279.95.

This and other DuMont receivers have consistently presented a high-quality picture in CR's tests. Sound quality was average on the Winsted.

A console model with 17 tubes, 3 rectifiers, and a 21-in. picture tube. Picture mask size, 19¼ in. wide x 13½ in. high. Cabinet of light wood construction. Estimated monthly operating cost, \$1. The picture was clear, steady, and of ample brightness. Sensitivity was average. Ability to reject external inter-

ference, good. Potential interference radiated by the receiver, low (desirable). "Snow" in picture, low. Operated very satisfactorily at low voltage. Quality of sound output from 10-in. speaker, average. Estimated acoustical range, 100 to 5000 c.p.s., average. *Chassis RA312/313, used in the *Winsted*, is also used in the following models: *Barton* (\$180), *Baylor* (\$240), *Bradley* (\$200), *Belvidere* (\$425), *Clifford* (\$330), *Delwood* (\$390), *Hamilton* (\$370), *Richfield* (\$400). 3

B. Intermediate

General Electric, Model 21T17 (General Electric Co., Syracuse) \$179.95.

An average receiver in most respects, but was susceptible to interference from motor-operated appliances.

A table model with 16 tubes, 2 rectifiers, and a 21-in. picture tube. Picture mask size, $18\frac{1}{2}$ in. wide x $13\frac{1}{2}$ in. high. Cabinet of combination metal and wood construction. Estimated monthly operating cost, 90c. Picture stability was below average; in other respects picture section was average to good. Radiation emitted by receiver, desirably low. "Snow" in picture, low. Operation at reduced line voltage, satisfactory. Quality of sound output from the small 4-in. speaker, below average for a TV receiver, and volume of sound output was comparatively low. Estimated acoustical range, 150 to 4000 c.p.s. 2

Hoffman, Model 21M166 (Hoffman Radio Corp., Los Angeles) \$199.95.

Picture quality was good in most respects, but sound quality was poor.

A table model with 17 tubes, 1 vacuum tube rectifier, 1 selenium rectifier, and a 21-in. picture tube. Picture mask size, $18\frac{1}{2}$ in. wide x $12\frac{1}{2}$ in. high. Cabinet of light wood construction. Estimated monthly operating cost, 60c (unusually low). Presented a steady, clear picture having ample brightness. Sensitivity was good. Ability to reject external interference, good. Potential interference radiated by the receiver, low. "Snow" in picture, low. Operation at reduced line voltage, satisfactory. Quality of sound output from $5\frac{1}{2}$ -in. speaker, poor. Estimated acoustical range, 75 to 3000 c.p.s.; cut-off at 3000 c.p.s. is unusually low (would be poor even for a small table radio set). *Chassis 302-21 "Gamma-3" was used in receiver tested and also in Models 21M183, 21M172, 21M357, 21B358, and 21P359. 2

C. Not Recommended

Emerson, Model 1006, Series C (Emerson Radio & Phonograph Corp., New York City) \$199.95.

Picture and sound quality were both below average.

A table-model receiver with 16 tubes, 3 rectifiers,

and a 21-in. picture tube. Picture mask size, $19\frac{1}{4}$ in. wide x $13\frac{3}{4}$ in. high. Cabinet of light wood construction. Estimated monthly operating cost, 80c. Picture quality (because of poor interlace and resolution—not only on set tested but on several other Emerson receivers examined in showrooms) was below average, although in other respects picture-circuit section was satisfactory to good. Satisfactory in respect to radiation from receiver and susceptibility to external interference. Operated satisfactorily at reduced line voltage except for considerable reduction in size of picture. Quality of sound output from 6-in. speaker was below average and considered insufficient for good musical reproduction. Estimated acoustical range, 100 to 4000 c.p.s., and distortion was high in output. *Appears to be similar to Model 1074 at \$179.95. 2

Motorola, Model 21T17 (Motorola, Inc., 4545 Augusta Blvd., Chicago) \$199.95.

Somewhat below average in several respects, as to both picture and sound.

A table model with 15 tubes, 1 vacuum tube rectifier, 1 selenium rectifier, and a 21-in. aluminized-face picture tube. Picture mask size, 19 in. wide x 14 in. high. Cabinet of light wood and "hardboard" construction. Estimated monthly operating cost, 70c (comparatively low). Picture stability was below average, as were picture quality, sensitivity, and susceptibility to external interference. Brightness and interlace were both satisfactory. "Snow" in picture, excessive. Operated satisfactorily at reduced line voltage. Quality of sound output from 5-in. speaker, satisfactory, but estimated acoustical range was 60 to only 3500 c.p.s., inadequate for good music. The chassis on this receiver was "hot," at full line potential. Servicemen and users who may have need to remove the safety guard covering the rear of the chassis should note that it is important to take proper precautions against accidental shock. 2

Off the Editor's Chest

(Continued from page 2)

difficult to determine. In the early days, the capable engineers of the big companies which turned out small radio sets and phonographs by the millions at low prices were unworried by any possible competition from those who catered to the hi-fi enthusiasts. They took the attitude that the public had a "tin ear" and that so long as their mass-production radio and phonograph

sets were in wide demand there was no need to take on the complex and cost-raising problems of reproducing sound faithfully and with concert-hall realism.

As the circle of those who could construct their own high-fidelity assemblies widened to include their friends and neighbors, there grew up in various cities special shops that catered to the needs of music lovers who were not particularly gifted in putting together the components of an adequate but intricate sound reproducing system and who did not know a tweeter (a small loud-speaker designed to reproduce high frequencies) from a woofer (a large cone speaker that reproduces low tones). The number of such establishments grew by leaps and bounds until in 1949 many of their wares were brought together in a commercial exhibit at a large New York hotel where the first Audio Fair was held, at which the attendance was something over 3000 people. Since that time, the demand for such audio exhibitions has increased, and they have been held in a number of large cities throughout the country this past year. The Audio Fair in New York City this past October was open three afternoons and evenings, and for six hours on Sunday in order to make it possible for the entire family to attend, and broke all records in attendance, with visitors to the number of about 31,000.

An intelligent or rewarding visit to a high-fidelity show is difficult for the novice to achieve on his own. The program and directory of exhibitors is arranged according to an alphabetical classification by name of the companies, each occupying a room or two in a centrally-located hotel. To wander in and out listening to sweet music delightfully reproduced, stunt records that blast the ears, or trick records that pop and squeal and toot is somewhat bewildering. The newcomer is fortunate if he has a hi-fi friend who can take him by the hand and point out the excellencies of this or that component part, the effect of a particular pickup, amplifier, or horn, and the amazing naturalness of a particular recording played over a finely engineered sound system. The expert is not taken in by advertising and mere display, and is inclined to pass rapidly by those exhibits at which salesmen rather than engineers or well-trained technicians are in attendance.

There are two types of high-fidelity fans. One is the hi-fi cultist who is interested in reproduction of striking sounds of wide range from the low beat of a primitive drum to a high tintinnabulation, the crash of a cymbal or the tinkle of a triangle, piercing train whistles and brake squeals, and characteristic sounds of a great

harbor. The other, and probably the larger, group simply wants pleasant music to listen to, agreeably reproduced. Their aim is probably best expressed as a wish "to bring the artist into the living room." For them, nearly every large city has a number of shops capable of installing a sound system that will transmit melody, harmony, and rhythm from the record to the listener with varying degrees of perfection at prices from a hundred dollars or so, to one or two thousand dollars.

The cost of a really good high-fidelity system is not small, and it will at times require expert attention and adjustment. The real expert is seldom satisfied with what he has and each year seeks out new improvements, to the dismay of his wife, who prefers to have the multitude of parts attractively housed in an acceptable cabinet and does not wish to have the entire living room completely redone each year to fit some new addition to or change in the components of the family's high-fidelity radio-phonograph. As a matter of fact, one writer takes the position that women do not like high fidelity and that it isn't just because she doesn't want the house cluttered up with odd-looking pieces of equipment. It is suggested that women's hearing is slightly more sensitive to high frequencies, and musical reproduction which sounds balanced to a man sometimes appears excessively shrill and harsh to a woman. The female listener therefore may prefer to have the volume control turned down or the high frequencies reduced a bit before she can enjoy a particular recording or radio program.

The beginner in the field is advised to secure the counsel of an expert or attach himself to a friend who knows something about the technical problems, and to do considerable comparison shopping before he finally makes a purchase. The matter is not one of simply buying an attractive cabinet in which all components are ready-assembled for simply connecting one plug into the electric power circuit of the home. Best results are often obtained by a scattered arrangement, with speaker separated from tuner or phonograph, and the components will run from \$120 up. CR's 1954 *Annual Bulletin* lists recommended assemblies of high-fidelity systems from an estimated \$215 (with FM tuner) to \$1300. The figures do not include a cabinet to house the equipment, or cost of installation. The results are usually highly rewarding, although once a person becomes a hi-fi fan, he is seldom satisfied. No doubt it is this American characteristic of wanting something new and better that keeps the industry ever striving for improved techniques and components.

Ratings of Motion Pictures

THIS section aims to give critical consumers a digest of opinion from a wide range of motion picture reviews, including the motion picture trade press, leading newspapers and magazines — some 19 different periodicals in all. The motion picture ratings which follow thus do not represent the judgment of a single person, but are based on an analysis of critics' reviews.

The sources of the reviews are:

Box Office, Cue, Daily News (N.Y.), The Exhibitor, The Film Journal, Films in Review, Harrison's Reports, Joint Estimates of Current Motion Pictures, Motion Picture Herald, National Legion of Decency, Newsweek, New York Herald Tribune, New York Times, Parents' Magazine, Release of the D. A. R. Preview Committee, Reviews and Ratings by the Protestant Motion Picture Council, The Tablet, Time, Variety (weekly).

The figures preceding the title of the picture indicate the number of critics who have been judged to rate the film A (recommended), B (intermediate), or C (not recommended) on its entertainment values.

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adv—adventure	mel—melodrama
biog—biography	mus—musical
c—in color (Technicolor, Cinecolor, Trucolor, Magnacolor, Vitacolor, etc.)	mys—mystery
car—cartoon	nov—dramatization of a novel
com—comedy	rom—romance
cri—crime and capture of criminals	sci—science fiction
doc—documentary	soc—social-problem drama
dr—drama	trap—travelogue
fan—fantasy	war—dealing with the lives of people in wartime
hist—founded on historical incident	wes—western

A	B	C	
—	7	10	About Mrs. Leslie.....dr A
—	2	8	Adventures of Hajji Baba, The...adv-c A
1	15	1	Adventures of Robinson Crusoe.....adv-c AYC
—	7	6	Africa Adventure.....trav-c AYC
2	4	—	Aida (Italian).....mus-dr-c AY
—	4	6	Ana-Ta-Han (Japanese).....war-dr A
—	3	—	Angelika (German).....dr A
1	3	—	Animal Farm.....car-c AY
2	9	2	Apache.....dr-c A
—	4	2	Athens.....mus-com-c AY
1	5	1	Barefoot Battalion, The (Greek).....war-dr AY
4	4	7	Barefoot Contessa, The.....dr-c A
3	9	2	Beau Brummell.....hist-dr-c A
—	5	3	Bengal Brigade.....mel-c AY
—	7	11	Betrayed.....war-mel-c A
—	—	3	Big Chase, The.....cri-mel A
—	4	7	Black Dakotas, The.....hist-mel-c AY
—	8	2	Black Horse Canyon.....wes-c AYC
—	7	2	Black Knight, The (British).....adv-c AYC

A	B	C	
2	7	4	Black Shield of Falworth, The.....adv-c AYC
—	7	3	Black Widow.....mys-mel A
—	4	2	Bob Mathias Story.....biog AYC
—	7	—	Bounty Hunter, The.....wes-c A
—	1	3	Bowery Boys Meet the Monsters, The.....com AYC
—	1	3	Bowery to Bagdad.....com A
—	10	2	Bread, Love and Dreams (Italian).....com A
2	8	8	Brigadoon.....mus-com-c AYC
6	9	2	Broken Lance.....wes-c AY
—	2	8	Bullet is Waiting, A.....cri-mel-c A
11	6	2	Caine Mutiny, The.....war-dr-c AY
—	2	1	Calling Scotland Yard (British).....cri-mel A
—	3	5	Captain Kidd and the Slave Girl.....adv-c A
5	4	4	Carmen Jones.....mus-mel-c A
—	8	8	Carnival Story.....mel-c A
—	1	4	Caroline Cherie (French).....dr A
—	6	3	Challenge the Wild.....doc-c AYC
2	2	—	Cinerama Holiday.....trav-c AYC
1	2	1	City Story.....soc-dr AYC
—	—	3	Companions of the Night (French).....soc-dr A
—	2	3	Crest of the Wave (British).....war-dr AYC
—	1	7	Crossed Swords.....adv-c A
—	6	2	Daughters of Destiny (French).....dr A
—	7	7	Dawn at Socorro.....wes-c A
5	9	3	Demetrius and the Gladiators.....dr-c A
—	5	1	Desires (German).....soc-dr A
—	6	—	Desperado, The.....wes A
—	2	3	Desperate Decision (French).....dr A
1	6	5	Detective, The (British).....mys-mel A
—	—	—	Devil's Pitchfork (see Ana-Ta-Han)
3	9	3	Dial M for Murder.....cri-mel-c A
—	4	9	Diamond Wizard, The (British).....cri-mel AYC
—	5	6	Dirty Hands (French).....war-dr A
—	9	1	Down Three Dark Streets.....cri-mel AY
—	14	5	Dragnet.....cri-mel-c AYC
—	8	—	Dreams of Love (French).....mus-biog A
—	3	—	Drum Beat.....mel-c AY
—	6	3	Drums Across the River.....wes-c A
—	4	7	Duel in the Jungle.....mel-c A
—	5	6	Earrings of Madame De, The (French).....dr A
—	5	5	Edge of Divorce (British).....soc-dr A
3	8	6	Egyptian, The.....dr-c A
—	1	2	Fast and the Furious, The.....mel A
—	2	1	Fighting Pimpernel, The (British).....mel-c AYC
—	1	4	Fire Over Africa.....mys-mel-c AY
—	2	3	Flamenco (Spanish).....doc-c AYC
—	2	3	Forty-Niners, The.....wes A
—	6	3	Four Guns to the Border.....wes-c A
1	11	1	Francis Joins the Wacs.....com AYC
—	6	2	French Touch, The (French).....com A
—	6	6	Gambler from Natchez, The.....mel-c A
—	1	3	Garden of Eden.....dr-c A

A	B	C		
3	9	4	Garden of Evil	dr-c A
—	—	4	Girls Marked Danger (Italian)	dr A
—	6	8	Gog	sci-c A
—	3	—	Golden Idol, The	adv AYC
—	5	4	Golden Mistress, The	mel-c A
—	6	6	Gorilla at Large	mel A
—	1	2	Half a Century of Songs (Italian)	mus-dr A
2	8	4	Hansel and Gretel	mus-fan-c AYC
—	1	2	Heat Wave (British)	cri-mel A
—	9	6	Hell Below Zero	mys-mel-c A
—	8	2	Hell Raiders of the Deep (Italian)	war-dr A
—	5	2	Hello Elephant (Italian)	com A
—	7	7	Her Twelve Men	com-c AYC
3	11	3	High and Dry (British)	com AYC
8	4	4	High and the Mighty, The	dr-c A
2	14	2	Hobson's Choice (British)	com A
—	1	11	Human Desire	cri-mel A
—	6	2	Human Jungle, The	cri-mel A
—	2	2	Illicit Interlude (Swedish)	dr A
2	3	—	Immortal City, The	doc-c AYC
—	3	1	Jazz Dance	doc AY
—	8	—	Jesse James' Women	mus-wes-c A
1	2	1	John Wesley (British)	biog-c AY
—	10	4	Johnny Dark	mel-c AYC
—	2	8	Jungle Man-Eaters	adv-c A
—	4	1	Khamishia (Israeli)	dr AY
—	3	8	Khyber Patrol	adv-c AYC
—	3	—	Killer Leopard	mel AYC
1	7	8	King Richard and the Crusaders	hist-mel-c A
4	12	2	Knock on Wood	com-c AYC
—	3	—	Last Time I Saw Paris, The	dr-c A
—	2	8	Law vs. Billy the Kid, The	wes-c A
—	1	4	Lawless Rider, The	wes AYC
—	6	3	Le Plaisir (French)	dr A
5	8	2	Little Kidnappers, The (British)	dr A
—	2	1	Littlest Outlaw, The	dr-c AY
2	7	6	Living It Up	mus-com-c AYC
—	5	3	Lovers, Happy Lovers (British)	dr A
—	9	5	Lucky Me	mus-com-c AYC
3	9	4	Magnificent Obsession	dr-c A
—	6	8	Malta Story (British)	war-dr AYC
4	8	6	Man with a Million (British)	dr-c AYC
—	2	3	Mexican Bus Ride	dr A
2	10	2	Mr. Hulot's Holiday (French)	com A
—	6	7	Naked Alibi	cri-mel A
7	10	2	On the Waterfront	dr A
—	2	1	One Summer of Happiness (Swedish)	dr A
—	5	1	Operation Manhunt	mys-mel AYC
1	3	1	Othello	dr A
3	8	3	Out of this World	trav-c AYC
—	4	7	Outcast, The	wes-c A
—	6	4	Outlaw Stallion, The	wes-c A
—	6	2	Paris Incident (French)	dr A
—	1	7	Passion	mel-c A
—	3	—	Phantom Stallion	wes AYC
1	3	2	Phfft	com A
—	3	—	Pleasure Garden, The (British)	fan A
—	1	9	Princess of the Nile	adv-c A
—	4	6	Private Hell 36	mel A
—	9	6	Pushover, The	cri-mel A
A	B	C		
—	7	5	Raid, The	war-mel-c AYC
12	6	—	Rear Window	mys-mel-c A
—	4	4	Red Inn, The (French)	cri-mel A
—	5	3	Return from the Sea	war-rom AYC
—	—	10	Return to Treasure Island	adv-c A
—	3	4	Ricochet Romance	com AYC
—	6	8	Ring of Fear	mel-c A
—	2	3	River Beat (British)	cri-mel A
—	7	8	Rogue Cop	cri-mel A
3	2	—	Romeo and Juliet (Italian)	dr-c AY
—	2	4	Roogie's Bump	fan AYC
4	5	—	Royal Tour of Queen Elizabeth & Philip (British)	trav-c AYC
—	—	3	Runaway Bus, The (British)	com A
5	12	2	Sabrina	com A
—	3	8	Saracen Blade, The	adv-c A
—	7	5	Scotch on the Rocks (British)	com AYC
—	2	2	Secret Assignment (Italian)	war-dr A
—	8	2	Secret of the Incas	adv-c A
—	3	2	Security Risk	mys-mel A
6	11	—	Seven Brides for Seven Brothers	mus-com-c A
—	4	5	Shanghai Story, The	mys-mel A
—	7	8	Shield for Murder	cri-mel A
—	7	3	Side Street Story (Italian)	dr A
—	3	—	Sign of the Pagan	hist-dr-c A
—	4	6	Silver Lode	wes-c A
—	1	7	Sins of Rome (Italian)	dr A
1	3	4	Sitting Bull	hist-mel-c AY
—	4	1	Sleeping Tiger, The (British)	mel A
—	7	—	Spell of Ireland, The	trav-c AYC
8	2	3	Star Is Born, A	mus-dr-c A
—	3	4	Steel Cage, The	biog AYC
1	9	6	Student Prince, The	mus-dr-c AYC
—	11	7	Suddenly	cri-mel A
—	7	8	Susan Slept Here	com-c A
—	4	9	Tanganyika	adv-c AYC
—	1	2	Texas Bad Man	mel AYC
—	3	3	They Rode West	wes-c AYC
—	1	5	This Is My Love	dr-c A
1	3	—	This Is Your Army	doc-c AYC
4	10	2	Three Coins in the Fountain	dr-c A
—	6	5	Three Hours to Kill	mel-c A
1	3	1	Three Ring Circus	com-c AYC
—	—	3	Three Steps to Murder (British)	mys-mel A
—	—	3	Thunder Pass	wes AYC
—	2	6	Tobor, the Great	sci-mel AY
—	2	1	Twist of Fate	mys-mel A
—	1	3	Two Guns and a Badge	wes A
1	8	3	Ugetsu (Japanese)	dr A
2	10	1	Unconquered	biog AYC
—	1	4	Unholy Four, The (British)	mys-mel A
2	6	9	Valley of the Kings	mel-c A
10	8	—	Vanishing Prairie, The	doc-c AYC
—	1	2	Varietease	com A
3	10	1	Victory at Sea	war-doc A
—	—	3	Voice of Silence, The (Italian)	dr A
—	2	5	Weak and the Wicked, The (British)	soc-dr A
—	4	—	Welcome the Queen	doc-c AYC
4	3	5	White Christmas	mus-com-c AYC
—	1	6	White Fire (British)	mel A
—	4	—	Woman's Angle, The (British)	dr A
1	6	5	Woman's World	dr-c A
—	1	2	World Dances, The	mus-doc-c AYC
—	6	3	Yellow Balloon (British)	cri-mel A
—	3	—	Yellow Mountain, The	wes-c A
—	4	5	Yellow Tomahawk, The	mel-c A
—	1	2	Yukon Vengeance	mel AYC

The Consumers' Observation Post

(Continued from page 4)

EYE DROPS AND EYE MEDICATION, commonly available from retail drug-stores, may, on occasion, be the cause of secondary eye infection. According to a warning by Dr. Frederick H. Theodore and Dr. Henry Minsky, both of New York, widely used eye drops on at least three occasions in the past three years were withdrawn from the market because of contamination. They point out that there is no definite governmental regulation requiring sterility of eye medicaments, and they suggest that specific U.S. regulations for commercially prepared ophthalmic medicaments be adopted.

* * *

MISLEADING ADVERTISING is becoming a new game to see who can beat the Federal Trade Commission. There is a new kind of operator coming into prominence in the advertising field, according to the Drug and Cosmetic Industry, who makes it a practice to see how far he can go with a misleading statement before he gets picked up by the F.T.C. Then, notes the journal, the advertiser with wide-eyed innocence meekly signs a stipulation to cease and desist printing the misleading advertising. The journal laments the fact that this technique is becoming so prevalent that something needs to be done to prevent such malicious and destructive competition from becoming a serious matter. Consumers who have fallen for extravagant advertising on the theory that no one would dare make grossly false or misleading claims in print or on the radio or over a television program will do well to take warning.

* * *

FROZEN DESSERTS which substitute inexpensive vegetable oils for butterfat are being marketed commercially in greater quantity in this country.



*This Christmas
give*

Consumers' Research Bulletin

When you spend \$3 to \$5 for a Christmas gift, you may get something that is perishable or which drops from sight as the holiday season wanes. But a subscription to Consumers' Research Bulletin is a constant reminder each month of your thoughtfulness. It provides the means by which the fortunate recipients can save substantial amounts of money on their household purchases. Your friends will appreciate your good judgment in giving them a gift that will enable them to pick for quality, performance, and economy.

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particularly in the Southwest, Mid-West, and Far West. In some places, such a product is known as Mellorine, in others "imitation ice cream," and "ice milk," reports Science News Letter. The makers include such dairy product producers as Swift & Company, National Dairy Products Corp., and Borden Company. The price of a half gallon of Mellorine is around 69 cents, where the same amount of ice cream sells for 99 cents and up. The oil used in the imitation ice cream product is customarily cottonseed oil, which accounts for 45 percent of the fats used in this type of dessert. Others are soybean oil, then coconut oil, corn oil, and peanut oil, in that order. The ingredients for Mellorine customarily include a 14 percent sugar content and a 6 percent minimum vegetable fat content (except in those states which require a 10 percent fat content), as well as milk solids and flavoring. Some states require the addition of the same amount of vitamin A as is required to be used in margarine.

* * *

NEW OR NEWLY TESTED:

Roll-Rite Can Coil Guide (Novel Art, Sunbury, Pa.). Set of three metal guides, 50c. This device, which is very simple in design, made of formed sheet steel, is to be used in connection with the key type of can opener to make certain that the roll of tin stays in place on the key and does not slip off. It was found to work effectively on a rectangular can (Armour Treet), a coffee can (Savarin), and a Crisco can. It was, however, considered that to some American housewives it would be just an extra gadget to clutter up kitchen drawers. The price of 50c was considered high; if there is sufficient use for such an item, it ought to be priced around 10c, and sold in variety chain stores.



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Phonograph Records

BY WALTER F. GRUENINGER

Please Note: The first symbol applies to quality of interpretation, the second to fidelity of recording.

Bellini: *Norma*. Callas, Filippeschi, Stignani, Rossi-Lemeni, etc., under Serafin. 6 sides, Angel Set 3517 C, \$17.85. A disappointment. Callas, as Norma, frequently sounds forced. Dramatic flair just isn't enough for this difficult role. Except for Rossi-Lemeni, no complaint with the remainder of the cast, the direction, the recording.

B AA

Berlioz: *Damnation of Faust*. Boston Symphony Orchestra and Soloists under Munch. 6 sides, RCA Victor LM 6114. \$17.85. A cantata of thrilling dramatic force. More beautiful solo voices than those of Danco, Poleri, and Singher could probably have been engaged, but the artists know the style and constitute little drawback to the show which features the orchestra. That body fully rises to the occasion.

A AA

Berlioz: *Harold in Italy*. Philharmonic Symphony Orchestra of London with Riddle (viola) under Scherchen. Westminster WL 5288. \$5.95. Columbia brought out a recording of this piece last year with Primrose as soloist and to the amazement of nearly everybody it became a best seller (ML 4542). Westminster's fidelity is higher and Scherchen conducts extraordinarily well. Riddle is a less sensuous player than Primrose but his tone is more penetrating.

AA AA

Handel: *Messiah*. Morison, Lewis, Thomas, Walker with the Huddersfield Choral Society and the Liverpool Philharmonic Orchestra under Sargent. 6 sides, Angel Set 3510C. \$17.85. A thorough performance of this great choral work, but more color would be welcomed. The bass strains somewhat, but the other soloists are good, and so is the orchestra and the chorus.

A AA

Liszt: *Les Préludes, Hungarian Rhapsodies, Nos. 1, 2, 3, 6*. Philharmonic Orchestra under Schwarz. RCA Victor LBC 1070. \$2.98. Good buy at this low price. Played with clarity and feeling, without exaggeration. Rich sound but heard, too, were a few ghost echoes and some background hiss.

AA A

Mussorgsky: *Pictures at an Exhibition & Franck: Psyché*. NBC Symphony Orchestra under Toscanini. RCA Victor LM 1838. \$5.95. The Ravel orchestration of the colorful Mussorgsky suite for piano is superbly recorded and played with the precision, detail, and drama we have come to expect of Toscanini. An outstanding disk—but so is Columbia's entry (ML 4035), and Mercury's (50000). The *Psyché* movement is a bonus found on Victor only.

AA AA

Mozart: *Four Horn Concerti*. Dennis Brain with the Philharmonia Orchestra under von Karajan. Angel 35092. \$5.95. Gold mine for those who like the French horn, and pleasant, charming music for others.

AA AA

Offenbach: *Gaité Parisienne* & **Meyerbeer:** *Les Patineurs*. Boston Pops Orchestra under Fiedler. RCA Victor LM 1817. \$5.95. Exuberant music, well liked at Pops concerts and nearly everywhere it is heard. Fiedler stresses the strong beat, attempts few delicate touches. Superb reproduction of *Gaité*.

A A

Saint-Saëns: *Carnival of the Animals*. Chamber Ensemble under Solomon & **Debussy:** *Petite Suite & Ravel: Mother Goose*. Bartlett and Robertson (pianists). MGM E 3114. \$4.85. All played in their original form which in the case of *Carnival* means by a group of 10 musicians. More room resonance would improve the recording.

A A

Schubert: *Symphony No. 9*. NBC Symphony under Toscanini. RCA Victor LM 1835. \$5.95. Schubert was at the summit of his powers when he composed the great C Major Symphony and Toscanini plays it with intensity, drama, and fire. For a more lyric interpretation turn to Bruno Walter on Columbia ML 4093.

AA AA

Schumann: *Symphony No. 4* & **Liszt:** *Les Préludes*. Detroit Symphony Orchestra under Paray. Mercury MG 50036. \$5.95. Paray conducts these venerable Teutonic numbers like nobody else. They seem light, vital, beautifully phrased. Bright recording.

AA A

Strauss: *Also Sprach Zarathustra and Salomé, Dance of the Seven Veils*. Chicago Symphony Orchestra under Reiner. RCA Victor LM 1806. \$5.95. Far from Richard Strauss' best works, but Reiner knows the score thoroughly and it is a pleasure to hear the music played with so much fire. For Victor, a new high in fidelity—a recommended test record.

AA AA

Strauss: *Der Rosenkavalier*. Reining, Jurinac, Weber, Vienna Philharmonic, etc., under Kleiber. 8 sides, London LLA 22. \$23.80. The cast is better than usual, with Weber as the Baron more musical and less the clown than many of his predecessors and contemporaries, but he lacks color on this record. Kleiber establishes the mood and he conducts with enthusiasm and an understanding of the grace of the score. Wide range recording (volume and frequencies). Singers seem to sound, in relation to the orchestra, somewhat as they do in the opera house. Yet the Baron's singing at times is too distant and I feel there is undue manipulation of volume controls by the engineers. There are a few ghost echoes and side 6 of my pressing swishes. Overall, an enjoyable recording of Richard Strauss' most enchanting opera. Tops competitive sets.

A A

A Leroy Anderson "Pops" Concert. Leroy Anderson and His Orchestra. Decca DL 9749. \$5.85. Anderson's clever, light music appeals to the teen-ager with a nickel for the jukebox as well as to the gentleman who subscribes to the symphony. "The Typewriter," "Sandpaper Ballet," "Bugler's Holiday," etc. Definitive performance and satisfactory recording.

AA A

Richard Wagner. Otto Edelmann (bass). Epic LC 3052. \$5.95. Superb singing—rich, clear, flexible, commendable style. Selections from "Meistersinger" (one full side) plus "Tannhauser," "Flying Dutchman," and "Parsifal." The Vienna Symphony Orchestra under Loibner and Moralt provide robust background.

AA AA

Bing (singer). 10 sides, Decca DX 151. \$27.50. Deservedly the featured release in Decca's 20th anniversary celebration. Bing and a few colleagues do 89 of the high spot songs with which he has been identified, in more or less chronological order. Some are old numbers re-recorded but most are new recordings. If Bing ranks as high with you as he does with me in the field of popular songs, you'll find this a most relaxing, delightful collection. Decca's recording engineers have done a magnificent job, too, in restoring some of the older records.

AA A

Coronation Concert by Burl Ives (folksinger). Decca DL 8080. \$4.85. Recorded at Royal Festival Hall, London, during an actual performance before an overflow audience. More interesting than most Burl Ives' records, for the excitement of the audience acts as a contrast to the easy going style of Ives. The disk includes Ives' introductions to the 14 numbers he sings, the audience applause and laughter, "Venezuela," "Mr. Foggie," "Blue Tail Fly," etc.

AA AA

Guitar Recital. Luise Walker. Epic LC 3055. \$5.95. Agreeable works by Albeniz, Ambrosius, Santorsola, Sor, etc., played with skill though not with the consummate artistry of Segovia which you can hear in the new *An Evening with Segovia*, Decca DL 9733, which offers pieces by Frescobaldi, Ponce, Tansman, etc.

A AA

Consumers' Research

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► VACUUM CLEANERS

Hoover
Kenmore
Electrolux
Wards
Regina Elektrikbroom
Kirby
Filter Queen
Lewyt
Westinghouse

► CIRCULAR SAWS

Skil
Blue Diamond
Millers Falls
Powr-Kraft
Craftsman
Stanley
Porter-Cable
Black & Decker
Cummins Maxaw
Mall

► ALL-WAVE RADIO RECEIVERS

Hallicrafters
Zenith Portable
RCA Victor Portable
National

► MEN'S WHITE DRESS SHIRTS

Pilgrim
Brent
Penney's Towncraft
Van Heusen
Arrow
Hathaway
Bond
Jayson
Longwear
TruVal
Wings
Manhattan